BELFAST NATURAL HISTORY
and PHILOSOPHICAL SOCIETY

139th-140th SESSIONS

BRITISH MUSEUM
1 JUN 1962
NATURAL HISTORY

PROCEEDINGS
and
REPORTS

Sessions
1959/60-1960/61

Second Series
Volume 6

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BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY

[ESTABLISHED 1821.]

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BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY

141ST SESSION

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AETHER AND MATTER

FIRST LARMOR-ALLWORTHY LECTURE

J. M. WHITTAKER, M.A., D.Sc., F.R.S.

It is a great honour to give the first lecture in memory of Sir Joseph Larmor. I believe that the original suggestion was that my father, the late Sir Edmund Whittaker, should be the first lecturer, and he would, of course, have been a much better choice, both because he knew Larmor well, and because he was the leading historian of the physical theories to which Larmor made such notable contributions. I do not think, though, that my father's health would have permitted him to make the journey during the last year or two of his life; moreover, he had already given a Larmor Memorial Lecture in the series founded by the Royal Irish Academy.

This lecture was not published, but I have read the manuscript of it and find that my father dwelt particularly on Larmor as the last great representative of the theoretical physicists of the nineteenth century whose thought was so largely dominated by the conception of light and electricity as disturbances in a material aether with definite mechanical properties. The number of Irishmen among those great men is very remarkable: Hamilton, MacCullagh, Stokes, Kelvin, Larmor and FitzGerald were all Irishmen, though not all of them spent their working lives in Ireland.

I have ventured to take the title of my lecture—Aether and Matter—from Larmor's great Adams Prize essay published in 1900, and this may suggest that I also intend to deal chiefly with Larmor's theories of the aether conceived as having mechanical properties; but Larmor's "Aether and Matter" was by no means wholely concerned with this point of view. It was the last word in the older theories, but it was also, in some respects, the first word in the newer theories which replaced them, and it is on this aspect of Larmor's work that I wish particularly to dwell.

Joseph Larmor was born at Magheragall in County Antrim on 11th July, 1857, so that this is his centenary year. He was educated at the Royal Belfast Academical Institution and at Queen's College, Belfast, at which he gained the highest honours. From there he went up to St. John's College, Cambridge, and was Senior Wrangler in 1880, the second being no less a person than J. J. Thomson. He was immediately appointed Professor of Natural Philosophy in Queen's College, Galway, and was there for five years. He then returned to St. John's as Lecturer and was appointed to the Lucasian Professorship, the Chair of Newton, on the death of Sir George Stokes. This he held till 1932, when he retired at the age of 75. He died on May 19th, 1942.

I can claim to have known Larmor, but I did not know him well. When I went up to Cambridge in 1924 he was still Professor, but he was then 67 and was not very active. The younger theoretical physicists were all working at the quantum theory and relativity, and Larmor was, I am afraid, regarded as rather a back number. Professors are rather out of the picture anyway at Cambridge, or were in my time. I never attended the lectures of any professor when I was an undergraduate, and I cannot now remember whether Larmor even gave any. As Eddington wrote in his Obituary Notice of Larmor:

> ". . . as he grew older, his style, never lucid, grew more and more involved . . . Indeed, communication of scientific ideas with Larmor, both orally and in print, was hedged with difficulty; as for writing—the illegibility of his letters was notorious."

As regards the obscurity of his discourse, I remember my father telling me that he was once present at a meeting of the British Association when Larmor expounded his views on the aether. Sir Oliver Lodge then rose and explained to the audience in simple language what he believed Larmor wished to convey. The spasms of excruciating agony which passed over Larmor's face while this was going on made an impression on my father which was never effaced. As for his writing, I can confirm that it was the very worst I have ever attempted to read. A friend of mine, Robert Schlapp, was a research student of Larmor's (so far as I know, the only one he had in his later years) and submitted to Larmor a programme of the research he proposed to follow. Larmor returned it with annotations, but as Schlapp could not read them he was in doubt as to what to do next. In particular he could not make out whether Larmor had written "These ideas seem quite fertile" or "These ideas seem quite futile."

Larmor's main researches belong to the period 1892-1901, and, before expounding them, I shall have to say something about the general background of physical theory at the time.

Physical thought in the nineteenth century was largely dominated by the quest for an elastic solid theory of light. More precisely, the problem was to devise a material medium which should, on the one hand, have properties not differing too widely from those of real materials, and, on the other hand, should be capable of sustaining vibrations whose properties resembled the known properties of light.

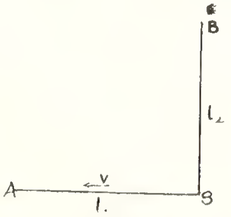
In the earlier versions, more attention was paid to the first requirement than to the second, with the result that the theory of real elastic materials was much clarified, but the properties of light were no better understood. There was, however, one remarkable exception. In 1839 MacCullagh went to the opposite extreme and devised a medium whose vibrations were in accordance with what was known about light, but which did not resemble in the least any known material. It possessed a property described as rotational elasticity; easy to describe mathematically, but quite unlike the kind of elasticity found in any real form of matter. Many years later, Lord Kelvin showed that a medium consisting of spheres in contact, each carrying a gyrostat, would possess the properties which MacCullagh demanded. However, this was far in the future, and even when Lord Kelvin described his scheme, it was felt to be going rather far, even by the standards of unreality which then prevailed. By the time Larmor came on the scene, MacCullagh had been vindicated because his equations were essentially the same as Maxwell's electromagnetic equations applied to optical phenomena. It was therefore clear that whether or not MacCullagh's aether could be conceived mechanically, it did undoubtedly represent the optical facts.

Larmor developed the theory of rotational elasticity, devoting particular attention to the possibility of having in its singularities which could be equated to electrical charges. He came to the conclusion that such an aether could support what he called "freely mobile intrinsic strains," and these he identified with the discrete electrical charges. Such a strain, though concentrated near a particular point, would be spread over a sensible part of the surrounding medium. The difference between positive and negative charges in Larmor's theory was one of chirality. That is to say, the strains differ in much the same way as a right-handed and a left-handed screw, similar in general respects, but incapable of being transformed into each other.

Forty years ago, in the hey-day of the point charge conception of electrons, all this sounded very unnecessary and perhaps even slightly comic. It does not seem so now. The advent of wave mechanics has forced us once more to think of electric charges as disturbances spread over sensible portions of space, and chirality has come into its own as the distinction between otherwise similar particles. This is quite fundamental in the modern theories of elementary particles.

A large portion of "Aether and Matter" was devoted to the optics of moving bodies. This had had a long history both on the theoretical and the experimental side; the latter, mainly owing to the fact that experiments on light in rapidly moving bodies are easily performed owing to the circumstances that we can experiment on light coming to us from the sun or stars while our apparatus is being carried forward with great velocity by the motion of the earth. The astronomical phenomena of aberration discovered by Bradley in 1728 was the first of these phenomena, and experiments of a more artificial kind had been performed by Arago and others in the early nineteenth century. The results were notoriously difficult to reconcile with each other. Aberration seemed to occur just as though light was being propagated in a uniform medium everywhere at rest, the observer's telescope being carried by the earth through the medium without disturbing it. On the other hand, Arago's experiments could only be explained on the hypothesis that transparent bodies, as it were, dragged the medium with them in their motion. Why then did the earth not drag the light-bearing medium with it, contrary to experience with aberration? The crucial experiment was performed by the American physicists, Michelson and Morley, in 1887.

As this experiment is so important, I should like to explain in a little more detail what it was. The account which follows is, however, a much simplified version of what was done.



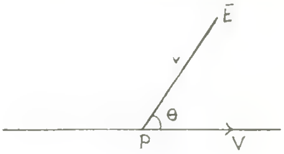
A source of light is split into two at S. One half travels along a rod SA of length l_1, in the direction of the earth's motion and is reflected back to S by a mirror at A. The other beam similarly goes both ways along a rod SB of length l_2 perpendicular to SA. The two beams are made to interfere on their return to S and the position of the interference fringes gives a measure of the difference in the time of transit. If c is the velocity of light and v that of the earth, aberration indicates that the light has velociy $c + v$ relative to the rod when it goes from S to A and $c - v$ on the return journey, so that the time of transit is

$$\frac{l_1}{c+v} + \frac{l_1}{c-v} = \frac{2l_1}{c\left(1-\frac{v^2}{c^2}\right)}$$

The time of transit for SB is $\frac{2l_2}{c}$. If $l_1 = l_2$ the comparison is obvious. In practice this is difficult to achieve and the difficulty is got round by rotating the whole apparatus through a right angle so that l_1, l_2 change places. The factor $1 - \frac{v^2}{c^2}$ ought to cause a continuous displacement of the interference fringes while the rotation is taking place. In fact no such displacement was observed, though the effect should have been easily observable. Repetitions of the experiment under conditions of greater accuracy have confirmed this null result. Before we leave the experiment, I should like to draw attention to one important feature. The expected phenomenon depends on the term $\frac{v^2}{c^2}$, i.e. on the second order of the small quantity $\frac{v}{c}$.

For some years the Michelson-Morley experiment was a complete puzzle; then, in 1892, FitzGerald made a brilliant guess. Namely, that motion through the aether altered the length of the rod and accordingly the time taken by the light to go along it. This alteration kept in step with the anticipated alteration in the speed of travel and so no effect was to be expected. This was the famous FitzGerald contraction. It was a quite fundamental advance, and its consequences are very wide spread in modern physics. But it was a bare hypothesis; FitzGerald did not offer any reason why it should occur. In Larmor's theory, its position was entirely different. He showed that, on his view that all matter is of electrical origin, there was nothing whatever surprising in FitzGerald's guess. On the contrary, it could be deduced from laws of electricity and magnetism which had been well known for years before FitzGerald's time.

Larmor's full investigation involves heavy mathematics, and I cannot even sketch it for you, but I think I can make the essential point clear by considering the case of a simple structure, the classical hydrogen atom. This may be pictured as a negative electron rotating in a circle round a positive proton, the centrifugal force of escape being balanced by the coulomb attraction between the charges. Let us enquire what happens when such a system is in motion.



The first law we need is that which states that a moving charge sets up a magnetic field. This is really Ampere's law that an electric current sets up a magnetic field, coupled with the fact, suspected by Faraday and proved by Rowland, that a moving charge is equivalent to a current. The moving proton P will therefore set up a magnetic field. The lines of force are circles having the line PV as axis and the magnitude of the force is $\frac{e^2 \sin \theta}{v^2}$

Now we make use of the second law, due to Heaviside, which states that an electric charge in motion in a magnetic field experiences a mechanical force of amount $\frac{1}{c}[v.H]$. The electron E is therefore subject to a force arising from the motion of P, and this force varies in magnitude and direction as E goes round. Thus the orbit will no longer be a circle, but some sort of oval curve with axes of different lengths along and perpendicular to the direction of motion.

By working out the full consequences of considerations of this kind, Larmor was able to show that a body in which the particles were subject to electrical forces would be contracted when in motion by precisely the FitzGerald amount. In modern parlance, what he was doing was to show that Maxwell's equations are co-variant with respect to a Lorentz transformation. His investigation was neither the first nor the last step in this fundamental result. Lorentz himself had already shown that the result is true for an approximate form of Lorentz transformation in which powers of $\frac{v}{c}$ above the first are neglected. Larmor's work was more complete in that he took into account powers of $\frac{v}{c}$ of order 2. Later on, Lorentz completed the theory by showing that the result is true when powers of $\frac{v}{c}$ of all orders are taken into account.

Now we have seen that the Michelson-Morley experiment is a second order effect. Lorentz's original investigation, in which terms of the second order are neglected, thus does not throw any light on it, and Larmor was the first to give a rational explanation of the FitzGerald contraction, and thus of the null result of the Michelson-Morley experiment, and certain other fundamental experiments on aether drift which were performed about this time and which will be referred to later. From the point of view of aether drift experiments, Larmor's investigation was all that was wanted, since when v is the velocity of the earth, terms of the order $\left(\frac{v}{c}\right)^3$ are quite inappreciable. Nevertheless, Lorentz's further stage, showing that Maxwell's equations are co-variant under the complete Lorentz transformation, was of great importance from the point of view of subsequent developments, both as pointing the way to the special theory of relativity, and because nowadays we are familiar with velocities so great that $\frac{v}{c}$ approximates to unity, and no powers of it can be neglected.

In the course of his investigation, Larmor made a discovery of great significance. Generally speaking, the rôle of mathematics is to enshrine established physical principles and to reveal their more obstruse consequences. There are, however, cases when the mathematics, as it were, takes charge and supersedes the physical principles altogether. This is very much the case with Maxwell's equations. Maxwell did indeed deduce them from physical principles, but these principles were so obscure and so incapable of experimental proof that no one has ever paid much attention to them and they are now more or less forgotten. As Hertz long ago remarked, "Maxwell's theory is Maxwell's equations"; and anyone who has worked with Maxwell's equations knows that the space and time co-ordinates are so closely linked in them that it is never possible to obtain results in which the two are effectively dissociated. Larmor duly found this. He had set out to deduce a contraction of the spacial co-ordinates by transforming Maxwell's equations, but the mathematics was too strong for him. He found that he could not establish the existence of a spacial contraction without at the same time predicting that a phenomenon of the same sort must happen in regard to time. Let us quote Larmor's own words, prefacing them by noticing that he uses the symbol ε for the expression $(1 - v^2/c^2)^{-1}$.

> "We derive the result, correct to the second order, that if the internal forces of a material system arise wholly from electro-dynamic actions between the systems of electrons which constitute the atoms, then an effect of imparting to a steady material system a uniform velocity of translation is to produce a uniform contraction of the system in the direction of the motion of amount
>
> $$\epsilon^{-\frac{1}{2}} \text{ or } 1 - \tfrac{1}{2}v^2/c^2.$$
>
> The electrons will occupy corresponding positions in this contracted system, but the aethereal displacements in the space around them will not correspond: if (f, g, h) and (a, b, c) are those of the moving system, then the

electric and magnetic displacements at corresponding points of the fixed systems will be the values that the vectors

$$\epsilon^{\frac{1}{2}}\left(\epsilon^{-\frac{1}{2}}f,\ g - \frac{v}{4\pi C^2}c,\ h + \frac{v}{4\pi C^2}b\right)$$

and

$$\epsilon^{\frac{1}{2}}\ (\epsilon^{-\frac{1}{2}}a,\ b + 4\pi vh,\ c - 4\pi vg)$$

had at a time const. + vx/C^2 before the instant considered when the scale of time is enlarged in the ratio $\varepsilon^{\frac{1}{2}}$."

So far as I know, this last clause is the first statement of a phenomenon affecting time of the same nature as the FitzGerald contraction in space. Larmor did not say any more about this remarkable conception. He does not in particular say anything about possible consequences of it which might be verified by experiment. Moreover, he limits it to bodies in which the forces are entirely of electro-magnetic origin. The next steps took place in 1904 and 1905 when Poincaré and Einstein introduced the special theory of relativity. In this the FitzGerald contraction and the Larmor time expansion play a central part, but they are now fundamental to the whole scheme of space and time and affect all systems whether the internal forces are of electro-magnetic origin or not. This is an important point since, as we shall see later, in the only case when Larmor's expansion has been verified by experiment, the forces concerned are not electro-magnetic.

Before we go on to this, let us consider for a moment the experimental position in regard to the FitzGerald contraction. FitzGerald himself devised an experiment concerning the mechanical forces on a condenser which he argued ought to be affected by the currents due to the motion through the aether of the charges on the plates, and so different according to the orientation of the condenser with respect to the earth's motion. The experiment was performed by his colleagues Trouton and Noble, but no difference could be detected. This was not, however, strictly speaking a test of the contraction, though it belonged to the same order of ideas.

About the same time, Lord Rayleigh argued that the contraction ought to cause a transparent material to become doubly refracting just as it would if compressed by a mechanical force. He tried the experiment, but also found a null result, and this was confirmed when the experiment was repeated with greater accuracy by Brace. Subsequent discussion showed that these null results were to be expected since the effects of the FitzGerald contraction were counteracted by other changes consequent on the motion through the aether as in the case of the Michelson-Morley experiment. So far as I know, the existence of the FitzGerald contraction has never been verified by anything which can be called direct experiment. The experimental verifications are always of the indirect type, instanced above, in which the existence of the contraction is inferred from the fact that, if it did not occur, some other effect arising from the motion would give rise to a measurable result instead of the null result actually observed.

Finally, let us consider how Larmor's time expansion could be verified experimentally. Clearly it implies that in some sense processes in a body in motion should proceed at a rate slower by Larmor's factor $\varepsilon^{\frac{1}{2}}$ than the same processes in a body at rest. The example usually given is what is known as Einstein's clock paradox of relativity: that if one of two twin brothers leaves home in a space ship and spends a considerable amount of time travelling at a high velocity, then when he returns home he will find himself physiologically younger than his less enterprising brother, and his watch will have performed fewer revolutions. Space travel has not yet advanced to the point when this prediction can be verified in precisely this manner, but in essentials the experiment has actually been performed.

Amongst the numerous fundamental particles discovered during the past twenty-five years there are what are known as μ-mesons. These are particles of mass about 207 times as large as that of the electron, bearing either a positive or a negative electronic charge. They were first discovered as an important component of cosmic radiation. In the upper levels of the earth's atmosphere they have velocities approaching very nearly that of light, so nearly that the Larmor factor has the value of about 15. Now these μ-mesons split up spontaneously into an electron and at least two neutral particles called neutrinos, and the mean lifetime of a μ-meson in flight is found to be about 30 x 10^{-6} a second. Moreover, they can also be studied at rest, and we should expect that their mean lifetime at rest would be smaller than their mean lifetime in flight by the Larmor factor. In this case we should, therefore, expect a mean lifetime of about 2 x 10^{-6} seconds for μ-mesons at rest. The measured value is in fact (1.5 ± 0.3) x 10^{-6} of a second. The agreement is close and it is certain that at any rate there is a very large difference between the lifetimes for decay in flight and at rest, the latter being the smaller.

I think it is reasonable to claim that Larmor's time expansion has been verified by these experiments, but it is fair to point out, as I indicated before, that the forces concerned here are not the electro-magnetic forces which Larmor had in mind. They are the mysterious nuclear forces which already play so important a part in our lives, but whose very existence was quite unsuspected at the time when "Aether and Matter" was written. Like all great discoveries, Larmor's contribution was to have consequences far wider than anything that could be foreseen in his time.

Abstract of

PRINCE PHILIP'S 1956 INDUSTRIAL CONFERENCE AND ITS IMPACT ON BRITISH INDUSTRY

by Group Captain G. W. Williamson,

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Chartered Automobile Engineer, Senior Member, American Society of Tool and Manufacturing Engineers

As its first Patron, Prince Albert, Duke of York, wrote to the Industrial Welfare Society in 1921 the following message for the 10,000,000 employees of its member-firms:

> "We are out to brighten the lives of our fellow-citizens in the workshops, to count them as men and women, and not merely as instruments of production. Their prosperity is our country's strength, their contentment is her security, and their happiness her best reward."

This became the Society's policy: and, in May, 1952, John Marsh, the present Director, suggested to Prince Philip a Commonwealth and Empire Conference, on the health, satisfaction, and effectiveness of workers in industry, on one hand; and, on the other, the social problems arising from the effects of industrialisation on the lives of workers, their families, and communities.

"Impact, like the explosion of a bombshell!" These are Prince Philip's own words to describe the effects of visits of inspection made by the Conference students, to every form of industry from coal to cotton. There were twenty teams of to-morrow's managers, engaged in studies and diagnoses of the industrial difficulties in our homeland, for the future good of their several communities when they returned to their own land.

They were well-prepared, first by a series of background papers issued in advance; then face to face talks, or should it be heart-to-heart communication, with His Royal Highness and his Council of fifty princes of industry, including trade union representatives; and finally, a series of addresses by industrialists, psychologists, sociologists and other experts on human problems.

But the impact with which we are concerned to-night must be that of Prince Philip upon the threat of inflation, civil strife in industry, and growing redundancy. These must be countered first by leadership, next by a policy such as the determination to "brighten their lives," and then by organisation and administration comparable to that wrought by Sir Winston Churchill in two World Wars.

"Captains are born!" exclaimed Frederic Winslow Taylor, Father of Scientific Management. "Born right, they must be trained right." Prince Philip fills that specification: his personality, character and qualities are revealed to us by the contents of three Oxford University Press publications:

i. Select Speeches, 1948 to 1955.
ii. The Challenge of Change, by Laurence Thompson.
iii. The two volumes entitled H.R.H. The Duke of Edinburgh's Study Conference 1956: I. Report and Proceedings, and II. Background Papers, Appendices, and Index.

These records begin, on the very first page, with a memorable and noteworthy dedication of our Queen of the Commonwealth and her Prince to the service of the community, reminding us of the motto of the Prince of Wales, "I serve," or the title of a General Motors employee handbook, "Serving our Employees."

Some of these speeches take a long look at that lengthened shadow of the past, which foretells, for you and me, Elizabethan Revival and a fortunate future belated though it be. The index entries in the two volumes, for two words, guarantee enjoyable work and full employment: they are "Participation," that sense of belonging, and "Profit-Sharing," as much a part of scientific management as enjoyable work, high wages, shorter hours, low costs, to quote from Taylor's classic management text-book.

The Contribution of the Natural Sciences :

Any student of philosophy could provide a massive and important paper on that contribution alone. It is of vital importance to our future as a great nation. We are wonderful in using the applied sciences to produce a series of miracles, including electronics, the computor, and automation; but, as Tennyson says, "We are fools and blind" when it comes to exploitation of what Prince Philip styles "the youngest science and the oldest problem," psychology.

In the dawn of scientific management, we have the evidence of eye-witnesses in regard to the very first application of psychology, reaction-time testing, by Frederic Winslow Taylor, about 1898, at the Simonds Rolling Machine Company's factory.

The turnover of labour, through sickness, in 135 girl-inspectors, was very considerable. Taylor borrowed the reaction-time tester from the local University to measure the intelligence, or speed of thought, of the girls, and sorted out 35 of them who could work four times as fast as the average; he shortened their hours, doubled their pay, allowed two ten-minute rest-pauses morning and afternoon, a total of 40 minutes off the working day, and appointed some motherly body to be present, always on the spot, to look after them.

In an address to the London Master Builders' Association of Students, Prince Philip asked for more houses at lower costs: "It is the industry's most important duty to reduce the cost of building houses without sacrificing quality. These are desirable and, I believe, attainable ends."

Fate and psychology provided an answer to that problem. Frank Bunker Gilbreth, born 1868, decided to become an apprentice-bricklayer, instead of taking up his scholarship at the Massachusetts Institute of Technology, because his Sunday School teacher was a foreman-bricklayer. At 27, he had offices in Boston, New York, and London, and married a psychologist, Dr. Lillian Moller Gilbreth, as she afterwards became.

Jointly, they devised a brick-laying system which may yet make industrial history:

Like Taylor, they selected men who were non-smokers and teetotallers, who not only possess more will-power than the average man, but have a lower incidence of accidents; they reduced the movements required to lay a brick from 18 to 5; there was no stooping, as the bricks were on a waist-high table, kept supplied by a hod-man; the mortar was "tempered" to the right consistency and kept supplied to a waist-high trough; the wall was always waist high, no stooping, no stretching, retained in that relative position by adjustable scaffolding.

Quoting from Taylor's "Scientific Management," page 81 of "The Principles of Scientific Management," Taylor compares output with his methods, combined with the Gilbreth technique, and the average in 1912, in U.S.A.

> "With union bricklayers, in laying a factory wall, twelve inches thick, faced and ruled joints on both sides of the wall, he averaged 350 bricks per man per hour, as compared with 120 . . . Measuring and recording the number of bricks laid by each man, and telling each workman at frequent intervals how many bricks he had succeeded in laying."

On the average, men were paid 60% more than local rates. But, in common with all other profit-sharing concerns, such men to-day would be given an individual contract, merit-rated, sometimes paid a 100% bonus. Lincoln Electric Company of Cleveland, Ohio, paid £1,700 per head at Christmas, 1959, on top of an average annual wage of £1,500, averaging £3,200 per annum.

Prince Philip, in other references to psychological progress, spoke of the work of Galton on "the mental differences between individuals"; Taylor has a scathing line on the futility of herding men together in droves, like animals. Especially in profit-sharing firms, the work-team is ten to a foreman, or less, dating from the suggestion made by Jethro to son-in-law Moses: "Thou shalt choose able men . . . rulers over ten."

Taylor thought that the ratio of management members to hourly paid workers should be one to seven. When Henry Ford's conveyor lines were erupting a car in ten seconds, 6,000 a day, 2,000,000 a year, there were five men to a foreman, and the price of the car, Model T, was £64. In 1914, wages were doubled, and hours shortened; the car was simplified and standardised, and, in total, 15,000,000 were made. Garet Garrett, in The Wild Wheel, says that the car was inexpensive but not cheap: exhaust valves were made from vanadium steel, and Johannsen, the inventor of gauge-blocks, was on the Ford payroll. The world could well do, now, with a universal agricultural vehicle, for inadequately developed States, beginning with India and Pakistan.

The success of scientific management and generous profit-sharing depends upon selection, whether by reaction-timing, non-smokers, or young people who can show a record of service in youth organisations. Many a great firm selects first, by assessment of character, not very difficult if the candidate has five years of squad drill, football and cricket, gymnastics and camping, first aid, joinery, sheet-metal work. Boys are not allowed to play football unless their church attendance is above reproach.

The two volumes of the Study Conference provide a veritable code of practice in spiritual matters: at page 203 of the second volume, Dr. Davidson Nicol, from Cambridge University, writes on "The Impact of Industrialisation and Science on Morality and Religion": at page 211, he writes, "Those who guide the worker in industry can certainly do so more beneficially and thoroughly if they understand the foundation and mainspring of Christian civilisation."

The right quality is specified in the words of an inquisitive scribe, in Mark XII, v. 33: "To love God with all the heart, and with all the understanding, and with all the soul, and with all the strength, and to love his neighbour as himself, is more than burnt offerings and sacrifices."

In two World Wars, productive ministries, like Sir Winston's Ministry of Munitions in 1917, and the Ministry of Production under Lord Chandos, 1942-1945, provided free consultancy from regional offices, staffed largely by the best production engineers in the world; and the National Institute of Industrial Psychology could easily organise such service, for groups of firms, in every industrial locality concerned.

It is 62 years since industrialists first heard of reaction-time testers, and N.I.I.P. can doubtless provide a considerable literature. They have been used by the R.A.F. to separate sheep from goats, "Will he make a pilot, or not?" If the answer is "Yes," should he be trained for fighter-pilot, or, with slower but sound reactions, will he do instead for larger aircraft, bomber, transport, flying boat, amphibian. The young man with an inferiority complex, likely to become a drinker, need never hold a steering wheel or kill a child.

As compared with these negative applications, psychology is a boon and a blessing in industry, one of the most important tools of the industrial economist.

The psychologist, often a medical officer, can measure how much work a man is capable of, and can train him, if he is the right stuff, to earn doubled wages; he can be educated and guided by means of emotions and motives; trained to develop self-expression, will-power, concentration of attention, with a shortened period of learning; and we can train and develop imagination, judgment, decision; beyond that again, powers of invention, intuition, creativeness, possessed by only one man or woman in a hundred.

Psychology, science of the immortal spirit in the individual, is a study uncomplicated by communications in a community. The spiritual make-up of Robinson Crusoe on his coral island will result in reactions exactly the same as those, at any time, when he is alone, as fighter-pilot, in a boat at sea, out for a walk. As a member of a happy home, school or University, factory or office, his reactions may be studied by another science, Sociology; and more than 90% of the documentation at the Study Conference is devoted to a programme in which the students could study sociological issues: satisfactions at work, organisation and relationships, education and training, employment and security, housing and travel, industry and the community, social values and ideals. The list appears on page 24 of Volume I of the Report and Proceedings.

"The Challenge of Change":

This little book, with a foreword by Prince Philip, deals with community or sociological problems, as seen through the eyes and mind of one of the students, Laurence Thompson, a journalist. The author sought every opportunity of talking to the 186 members of Commonwealth and Empire. The task of the Study Group of which he was a member, page 268 of Volume I, was "Adaptation to Change."

One of the good things was, in visits to Scotland and London, flexible teams of designers, managers and labour to meet changing conditions. Delegates spoke highly of the unions, strong and well-administered; with joint consultation in various forms, they criticised one example of bad management, where there was not, and never had been, any contact with the local unions. They had a kind word to say for the retired executive, losing half his salary and all his status in a single week, out of work for the rest of his life. Some of them, chartered engineers especially, follow U.S.A. practice by setting up, in conjunction with congenial friends, management consultancies.

Conference delegates from abroad did not think well of our unions, or of their own, usually with poor communications between management and union, or union chiefs and their constituents. They noted that, as in other countries, dockers were much neglected and much maligned, wanting status rather than more pay; and, in a single phrase, they summed up what is wrong with a high proportion of British management: "We suggest that it is not a good idea for the Board to debate a change for two years, and then give the unions 24 hours notice of redundancy."

From Mr. Thompson's brochure, we get the only independent picture of Prince Philip and his work at the Conference:

> The Conference was his. He delivered the opening address, presided at two open sessions and three dinners, walked up and down the rain-swept platform of Oxford station on the morning the members left, waving and being waved goodbye. The warmth of the reception he received was that of a young man who had established his right to lead this Conference on his abilities alone. He was on the same wave-length as these managers, technicians, trade unionists, talking their language, thinking their thoughts. When he said, at the final session, "You, unlike myself, will go back to put these ideas into practice," some of us were rather moved.

In the Opening Address, Prince Philip laid down his policy in these words: "The criterion is the happiness, satisfaction, contentment, or whatever word you care to choose, of the individual as a citizen and not merely a worker, and of communities present and future who depend on industry for a livelihood."

Impact on Industry :

When all the Groups had returned and reported, the results were summed up by the Chairman, Sir Harold Hartley. A single paragraph showed that there *was* a genuine impact of the new management on those who were present, even including the fifty princes of industry who formed the Council. Sir Harold summed up, finally, as follows:

> "The striking fact was the unanimity of so many Groups on certain basic issues. Again and again Groups reported that all the techniques of management—consultation, promotion, bonus systems, welfare—are subordinate to one over-riding demand: the demand for personal contact between manager and managed, with an absolute sincerity of purpose, and a recognition of the simple respect which one man owes to another, as man to man."

This simple respect, affection, or, at its best, "loving one's neighbour," is the one feature which distinguishes scientific management from mere mastery. Not many British companies, in proportion to their numbers, belong, for example, to the Industrial Co-Partnership Association; in U.S.A., 10,000 companies belong to the Council of Profit-Sharing Industries in Chicago, 6, or the Profit-Sharing Research Foundation at Evenstown, Illinois. As far back at 1951, the employees of these companies exceeded 1,300,000.

One of the great advantages of scientific management, as laid down in Taylor's book with that title, is that no other guide is necessary to enjoyable work, as regards simplification of the product, and international standardisation, with high wages and low costs; and Taylor was able to say that redundancy was entirely eliminated: in all the years of his personal work, there was not a single worker made redundant, and there was never a single strike — so different from us!

The two volumes of the Conference do not date: they are an infallible code of practice, and they are unique because, inspired by Prince Philip, they form one more link in the golden chain which began with the young Duke of York, Her Majesty's father, and his industrial policy; here it is, again:

> "We must educate the world . . . that we are out to brighten the lives of our fellow-citizens in the workshops."

Prince Philip, years ago, foresaw the promise of revival: "The characteristic of all great periods of the English history has been a nation-wide sense of confidence and adventure, which went with a feeling of personal service to Sovereign."

It is, of course, a second Elizabethan Revival: more than 400 years ago, another young Elizabeth spoke proudly to her first Parliament, in heartfelt sincerity: "I desire to have the obedience of my people by love, and not by compulsion." The ancient eye-witness goes on to record that "Loyalty became a passion, religion a chivalry. England became the people of a book, and that book the Bible."

THE PUBLIC RECORD OFFICE AND THE LOCAL HISTORIAN

KENNETH DARWIN, M.A.

I must start by saying what I do not intend to do so that you do not expect what you are not going to get. I am not going to talk about the contents of the Record Office. I think there is nothing more tedious than a talk which, in fact, is merely a catalogue and assumes that the audience cannot read catalogues for themselves. I want to stimulate, if possible, a discussion on local history, whether it has any value, if so, what this value is and what part the Public Record Office should play in local historical studies.

Local history is important and valuable, provided it does not degenerate into parochialism and provincialism, and it has always seemed to me that here in Ulster, such degeneration is a real danger. The local historian must keep a sense of proportion and perspective. The value of local history lies in the way in which a regional study of some national policy or event illuminates our understanding of that national event by showing how it affected the lives of individuals and in some ways local history is, therefore, the only real history. It deals with all sorts of events and their impact at the lowest level—their impact on the individual. The individual in this context is the average man and not the national figure.

Unfortunately, there are no studies of Ulster history of the type of which I am thinking. I had, therefore, to turn to English historical writing for an example. Without commenting on A. L. Rowse's reputation, I should like to consider his book "Tudor Cornwall" as an example of the sort of local history which I would like to see written in Ulster. The real value, to my mind, of this book lies in its revelation of the way in which the Reformation and social revolution of the 16th century actually took place in England. We see what this revolution meant to families and to whole parishes and districts in the redistribution of Monastic lands and the creation of powerful interests and influences which have lasted into the present century. I do not think anybody could read this book without feeling that they had been transported into the 16th century, and without feeling that they really understood what the Reigns of Henry VIII and Elizabeth meant to those who lived through them.

This is the sort of local history which we require, but unfortunately, very little of it is being written. The writing of local history seems to be regarded as being something which should be left to the amateur and the antiquarian with rather more enthusiasm than knowledge. Some of the local histories written and published consist of little more than extracting from printed sources references to a particular place-name and putting these together in chronological order. This may be a useful compilation, but it is not a local history. What is needed is something much more fundamental in its approach. For example, the history of the 17th century land settlements in Ulster is not a matter of finding out the names and addresses of certain people who settled, although that is important spadework. What is needed is a study of what actually happened to specific families and specific pieces of land and this information needs to be placed against the background of the Irish and British history of the time. Similarly in the 18th and 19th centuries the administration of the large landed estates is a basic study not started yet.

Having given this indication, of what I should like to see happen, let us have a brief look at what is actually happening at the moment. The creation of a Professor of Irish History at Queen's University has passed with little public comment but it seems to me that this event ought to be regarded as a point round which public opinion might gather on this issue. It is, of course, scandalous that there has not been a Professor of Irish History at Queen's for the past 50 years, but it is no good bemoaning that fact now. Let us consider what is happening at the moment here. At the present time, the Ulster Archaeological Journal and Ulster Folk-life publish articles on what might generally be called local historical topics from the Stone Age to the present day. There is no doubt in my mind that the publication of the type of articles which we are getting in Ulster Folk-life and the articles dealing with social patterns of the past 200 years which appear in the "Ulster Journal of Archaeology" by such writers as Dr. McCourt will stimulate the sort of local history which I should like to see written.

We can consider this study of local history at, perhaps, three levels: school, the undergraduate and the post-graduate stages. Intermediate Schools in Ulster have for a considerable time had projects based on local studies in which the historical and geographical background to the development of towns has been studied by the schoolchildren in an effective, but simple way. This is an admirable development in historical teaching and must help the children to think of history in terms of ordinary individuals living their ordinary lives, rather than in terms of Kings and battles. At the undergraduate level, it could be argued that local history would merely make the syllabus parochial, but I personally think that most undergraduates would suffer no harm from being made to see exactly what the generalisations about decades and centuries meant in living conditions and social upheavals to their own ancestors and for them this impact of reality can best be done by introducing them to basic documents. The Geography Department at Queen's University has always seemed to me to do rather more local historical research than the History Department. Perhaps the best example of what I mean by this is the work which Dr. R. C. Buchanan has done on the Barony of Lecale and I hope it will be possible for the work which he did for his doctorate to be published, as it will present us with an example of the sort of local study which we need. It is a good example of what I am getting at, because it was started as an undergraduate study and developed into a postgraduate research project and I think that Dr. Buchanan would be the first to agree that what he has done for Lecale, other people could do for the other Baronies of Ulster.

This has brought me to the post-graduate phase. I know that there are strong feelings in academic circles about the pros and cons of research projects. On the one hand, there are the dons who plan vast schemes and use research workers as labourers to provide raw material for large-scale projects, and there are others who prefer to allow a man to follow his own particular, and sometimes very narrow interest. The creation of the Professorship of Irish History at Queen's University should be followed by the creation either formally or informally, of a post-graduate research project on Ulster history. We really know very little, for example, about migration from Scotland to Ulster in the 17th century, about the non-conformist migrations from the North of England to Ulster after 1660, about 18th century trade and commerce from Belfast—one could go on endlessly suggesting topics which ought to be dealt with, and as far as I can see, the only way in which work will ever be done on these strangely neglected topics will be by organised research, directed by a Professor with some overall plan in mind. This does not mean that people should be compelled to work on periods and subjects in which they have no interest, but it does mean that they should be encouraged to fit their interests into a plan which would eventually provide us with studies which would enlighten the obscure patches in Ulster history. What I am really asking for is local history written by people of the highest quality as serious research. The natural corollary of this is a University Press to publish the work. One hopes that one day Queen's will have such a publishing organisation.

I suppose I shall be accused of criticising by implication those who have written local histories in the past. This, of course, is true. A great many of the parish histories were written by devoted clergymen and have preserved for us extracts from public records which were destroyed in 1922 and we ought to be very grateful to them for the hours of transcription which they put in. What is wrong with so many parish histories is that there is no attempt to analyse the material and give it some kind of historical perspective. But no one is more aware than I am of the value of the facts which are recorded in some local histories. The Statistical Surveys of the Counties in the early 19th century, "Lewis's Topographical Dictionary" and so on are encyclopaedias of information.

Having said so much about other people and institutions, I should now like to turn to the Public Record Office and consider what it ought to be doing in this field of local history. The primary task of the Public Record Office is to look after the old documents and records of the Courts of Law and of Government Departments and to decide which of these should be preserved permanently, and which may be destroyed. It then has the duty of preserving those which are to be preserved and making them available to the public for consultation. It has been recognised, however, from the day that the Northern Ireland Public Record Office was opened in 1924, that there was more to it than this. The first Deputy Keeper, Dr. Chart, was concerned to find substitutes for the records which had been destroyed in the Irish Public Record Office in Dublin in 1922 and from the first deposits of private archives were encouraged. The Public Record Office in Belfast, therefore, has responsibilities which in England are carried out by the County Record Offices. Perhaps I might explain here that in every county in England, but two, there is now a County Record Office run by the County Council into which are being collected the records for which the County Council is responsible, and also vast quantities of private records. Essex is pre-eminent in this field but everywhere new buildings are going up as the community recognises the value of old papers. In Ulster, the Public Record Office has been collecting private records for over 30 years and, in my view, the situation in Northern Ireland does not call for the creation of County Record Offices on the English model. Ulster is a small enough unit to be conveniently worked by one Record Office. It is, after all, in population, a good deal less than many English counties, although in area it is equal to the largest English county, Yorkshire.

The real point is that private archives are the main source from which a local historian in Ulster can get original material and the building up of this side of the Record Office's work seems to me to be the best way in which the Public Record Office can contribute to the study of local history in Ulster. There is no point in having post-graduate students at Queen's if we have no material available on which they can conveniently work. I stress the word "convenient." The physical difficulties which beset a research worker in Ulster are enormous by comparison with his counterpart in England and Scotland. Over here he really has to search for his material. The people who blew up the Irish Record Office in 1922 are to blame for that, but the situation does present a real challenge to both the Record Office in Belfast and to the public at large. It is not just a matter of the Public Record Office making microfilms of the material relating to Ireland which exists in London, Oxford, Cambridge and Edinburgh, although I think we ought to do something on a much larger scale than we have done in the past. The speed at which things are done depends very largely on public opinion: governments are loath to spend money on projects for which they consider there is little public demand. But even if everything relating to Ulster in repositories outside Northern Ireland were microfilmed and deposited in Belfast, there would still be a large gap in our archives and this gap can only be filled by gathering in material which is at present held by private individuals and institutions. This material falls into four categories and is held by four groups: landowners, solicitors, long-established Institutions of a semi-public nature and papers held by private individuals. In the past 30 years, documents from all these sources have been deposited in the Record Office and have been used by students of all kinds, but the collecting has been done in a rather haphazard manner. During the 1920's and 1930's, the work which the P.R.O. in Belfast was doing in this field was of a very pioneering nature. Nowhere else at this time was the collection of private and semi-public archives taking place. But since the end of the Second World War, the enormous development of County Record Offices in England and in particular the work of the National Register of Archives, have reversed the position, so that Ulster has now fallen rather behind the rest of the United Kingdom in this work. In order to make the Belfast P.R.O. more efficient in this particular field, we started last year a six-year project, in which we intend to survey all the six counties of Northern Ireland by having a full-time field worker out of the Office, out on the ground looking for, examining and collecting all the records he can find. We have already finished the southern half of County Down and this scheme should not only give us many more deposited records, but it should also enable us to compile lists of records which are held locally and this will enable us to guide local historians to material which they require, even when it is not held by the Public Record Office.

I would like to say something about the value of these four groups of records which I have just mentioned. Ireland is essentially an agricultural country, and the history of the countryside for the past 300 years, at least in Ulster, is the history of the large landed estates. Most people were tenants of some landlord and the records created in the Estate Offices of the landlords are absolutely basic source material for local historians. The contents of large Estate Offices are very, very varied. Unfortunately, fires and accidents have destroyed many records but a great deal survives and most of the present-day owners of these records have co-operated with us in making them available to research workers. Some have not been as forthcoming as others and it is part of the P.R.O.'s job to create a public opinion where people will be more willing than some now are to hand over such old records for use by the local historians. Insofar as we in the P.R.O. are able to persuade landowners to deposit their records with us, I feel that we are making a real contribution towards local history. Insofar as we fail to do this, I feel we are not doing our job and although we can usually make some excuse for failures, I am very much aware that they are merely excuses. The records which Solicitors hold on behalf of their clients are another major source for local history. Here again it is a task for the Record Office to lead Solicitors to an understanding of the needs of the local historian and to soothe the fears of Solicitors about the dangers of making records available to research workers. Such fears and dangers are usually exaggerated, but they are difficult to eradicate. It is true to say that most businesses do not need to keep most papers for more than 20 years, except for occasional reference to a very limited number older than that. Even title to land need not now be proved for any really considerable time. There is, therefore, no really valid business reason to prevent Solicitors handing over most of the old documents in their offices. What holds most of them back is the fear that among them there may be confidential information which, of course, they should not make available to outsiders. This is a major difficulty and a very real one, as usually the Solicitors who have the oldest records, have also the bulkiest and it would be quite unreasonable to expect them to sort these records themselves. They have neither the time nor the money to do it. What we in the Record Office have to do is to create an atmosphere of confidence so that Solicitors will be willing to allow us to do the sorting, confident that we will draw their attention to anything of a confidential nature and return it to them, and equally, that we will abide by any restrictions and conditions which they place on the production of their records for research workers. This is rather a difficult and a slow task, but so long as the Record Office does not make progress in this direction, it is letting the local historian down.

The records held by public and semi-public Institutions present their own problems. The Belfast Charitable Institution, the Royal Belfast Academical Institution, Queen's University, and so on, all have their own archives. They have a history of which they are proud, and on the whole, such bodies wish to keep their old records in their own possession. Most of them would be willing to allow access to them by serious research workers, but sometimes there are practical difficulties in the provision of space for them to work, and finding somebody with the time to produce documents and to supervise their use. One solution would be for the Public Record Office to microfilm such records or to come to some arrangement by which such bodies would deposit records, on which particular students wish to work, in the Record Office on temporary loan, until the student in question had finished using them. I would like to make it clear that I regard it as part of the Public Record Office's job to help students to gain access to the archives of such bodies and although technically the Institutions I have in mind are private bodies, they are Institutions which serve the public and in many cases receive money from public sources. They should, therefore, feel themselves under an obligation to provide genuine research workers with facilities to consult their records. It would be possible to argue a case for defining the records of a lot of such bodies as public records, but to do so would be against the traditions of our public life, where we generally try to do things either on the "old boy net" or by a mutually agreed solution, rather than by what would inevitably be regarded as high-handed bureaucratic interference.

The papers held by private persons present their own difficulties and the major one is to discover them. In theory, everybody has a set of private family archives, even if it is only a miscellaneous collection of unanswered letters stuck behind the clock on the mantlepiece. The major difficulty is not to discover the papers which are 150 or 200 years old, because people who possess things as old as that have held on to them because they consider them to have some value, and generally know that they possess them. They can be got at by public appeals and exhibitions and often through their friends and acquaintances. The private papers we should be most concerned about are those which are less than 100 years old and perhaps most of all, those which are less than 50 years old. There is a very real danger at the present time that the papers of the people who created Northern Ireland in the first 25 years of this century, will be destroyed by their sons or grandsons, unaware that they are destroying a primary source for the History of Ulster. It is extremely difficult to get the point over to people that things which are less than 100 years old and particularly less than 50 years old, have got historical value. There are certain obvious museum pieces—a Carson letter, papers about the gun running, etc.—which everybody recognises, but the main difficulty is a widely-held idea that there are plenty of other records about these particular and comparatively recent events, existing elsewhere. So much paper is created nowadays that there is a widespread feeling that somewhere a paper will survive about a topic and that there is no need to keep this particular letter or this particular diary which one has in one's own possession. The result is that nobody keeps anything, under the delusion that some other person is keeping it. What the P.R.O. should be concerned about at this time is these comparatively recent papers. Otherwise, when the local historian comes to write the history of the past 50 years, he will find few family private papers for his use.

There are, of course, other factors in this destruction, such as the social changes which are leading to the disappearance of the large urban mansions in which families tended to live generation after generation and where there was no need to clear out old junk. But the people who live in flats and the smaller suburban house have the problem of storing even the papers that they themselves collect in 35 years, a Father's, Grandfather's and Great-Grandfather's accumulated junk as well is a hopeless problem and out it goes. I use the term "junk" advisedly, because archives are junk. They are papers which have no immediate use to the person who has created them and little possibility of their being of use in the future. Their value lies in the use which someone else, other than the owner can make of them for a different purpose. This brings me to the question of the use of the material which the Public Record Office collects. I am often asked when I proudly proclaim to somebody that we have brought in a furniture van load of old documents "will anybody use it?" This is a very salutary question to be asked and it is one to which I can never give a very convincing answer. At any moment it is only a very small proportion of any collection of records which is actually being used, just as in a library, only a very small proportion of the books in the stack are actually on the reading room table in use. The point is that, as with a library, one never knows what people will be looking for. One never knows, in fact, where they will find the information that they are looking for. This point has been made many times, and I do not intend to flog it. I would say quite firmly that it is not the job of the Public Record Office to see that this material is used. It is collected and preserved for the use of the public and that public is largely research students from the Universities and members of the general public who are interested in local history. The job of the Public Record Office essentially is to collect and store, to catalogue and to produce when requested. It is not the job of the Record Office to write histories from the records which it holds. Thus I feel that the Record Office itself can be let down by the public and the local historian if they fail to make use of the facilities which it offers. Equally, I think the public and the local historian can justifiably feel let down also, if the Public Record Office fails to provide them with the material and the facilities which they require. Each can help the other in a very practical way. If more worthwhile local histories were written and it was apparent that they were based on research in material in the Record Office, the usefulness of the P.R.O. to the community at large would be proclaimed. This would eventually enable the Public Record Office to become an even more useful public Department, because it is not until the public in general appreciates the value of a really good Record Office and asks for it, that it gets one.

A SHORT HISTORY OF OLD TIME FIRE FIGHTING

J. H. SMITH

From the earliest times, man has sought a simple means of creating fire and also a simple means of extinguishing it. Just over a century the development of the friction match made the production of a flame the work of a moment, but no one has yet devised a simple and safe method of extinguishing fires, other than pouring water on it.

It is known that the Ancient Romans had a Fire Brigade, armed with squirts and buckets, under the command of a Lictor or junior law officer, who had the power to execute a misbehaving fireman. This rather drastic system does not seem to have prevented the Roman firemen from extracting the maximum amount of loot from a burning building instead of concentrating on extinguishing the fire.

Fire engines first began to appear about 1660, they were little more than water carts and were often named. One of these ancient engines which had actually been at the great fire of London in 1666, was still in service in Bournemouth at the turn of the present century, was suitably named "Ye Deluge."

Although a number of inventors were at work over the years to produce a fire engine, the most successful was that invented in 1725 by Richard Newsham of Cloth Fair, London, which he described as a "New water engine for the quenching and extinguishing of fires." Newsham's engine was worked by both handles and treadles and as hoses had not been invented it projected a stream of water on the fire through a curved metal pipe.

In 1786 old Belfast made its first attempt at organized firefighting, the Town Council had holes made in the arches covering the Farset river under High Street. These enabled a supply of water to be drawn up to put out fires and in charge of these holes were a squad of men, who were paid thirty shillings per annum and five shillings for each attendance at an actual fire.

Gradually many of the towns in Britain acquired one or more manual fire engines; these were forgotten between fires so were in a very bad condition when a fire broke out. To quote from the *Belfast News-Letter*, reporting a serious fire in Church Street in January, 1816: "The town fire engine was, after some time, brought to the spot, but without any buckets and in such a shameful want of repair as to be totally inoperative, for after having been worked for two or three minutes one of the pipes burst and consequently the engine became useless."

With the growth of Fire Insurance business in the eighteen hundreds it soon became clear to the Insurance Companies that they had better take a more active part in firefighting: this they did by forming their own fire brigades. These brigades only put out fires in property insured by their particular company and to guide their firemen they attached a distinctive fire mark to each building they insured. Many of these old firemarks may be seen in the Belfast Museum.

In 1833, the Royal Exchange Assurance Company of London advertised in Dublin, "Fire-men, powerful Engines and other Instruments, are in constant readiness, in case of accident, and maintained at a large expense, for the security of the public. The men are distinguished by an Uniform of Light Green, with Gold Badges bearing the figure of the Royal Exchange, the Emblem of the Company."

Many of the uniforms worn by the Insurance firemen seem more decorative than useful; it should not be forgotten that the men were usually ex-seamen, extremely adaptable and what is more important accustomed to discipline and working to great heights. They had much to contend with, as for example the fire at the Argyll Rooms in 1830, when the cold was so severe that the manual fire engines became frozen and useless.

In 1860, a former army captain named Shaw was appointed Superintendent of the Belfast Brigade and also chief of the local Police. Shaw set to work to examine every detail of the Belfast Brigade's equipment, including the water supply and one of his reports makes interesting reading. Describing the fight to subdue a dangerous fire in Hill Street he wrote, "Of the two nearest fireplugs, one was completely dry, and the other so buried in dirt that it was some time before we could force the cover open."

Shaw recommended that the town fire engines, often described in the press as, "Useless water throwing machines," be disposed of and replaced by two of the type used by the London Brigade. The new fire engines cost £120 each and seem to have been quickly delivered but Shaw had little time to see them in action, as he was appointed head of the London Fire Engine Establishment, following on the great Tooley Street fire of June, 1861, which consumed property to a value of nearly £2,000,000 and caused the death of the then Chief Officer, James Braidwood.

Braidwood, a Scot, was the first fire-fighter to make a scientific study of fire and its causes and as long ago as 1830 published the results of his researches. Shaw carried on the Braidwood tradition and developed it, he wrote many books which are still classics of fire-fighting, constantly examined equipment and suggested improvements. His system of post-mortems after fires is now general in all Fire Brigades.

When Shaw took over the London Fire Engine Establishment, it had one steam fire engine on hire from the makers, thirty-nine manual engines, seventy escapes and one hundred and twenty firemen to provide fire cover for a city having a population of 3,000,000. Shaw set to work training extra firemen, increasing the number of fire stations and personally attended as many fires in the London area as was humanly possible. When he retired some thirty years later it was said he had attended some 50,000 fires.

Belfast acquired its first steamer in 1877; this, however, only attended important fires such as the blaze at Dunvilles on the Grosvenor Road early in 1878. The steamer with its shining brass top held sway in Belfast until 1910, when it and its attendant horses were swept away by the motor driven pump.

SOME EARLY BELFAST SCHOOLS AND SCHOOLMASTERS

R. H. HARTE, M.A., D.PH.

Our story begins in the year 1648, thirty-five years after Belfast had been made a borough. On 11th January of that year, The Sovereign and Burgesses agreed "to allow a stipend of ten pounds a year for a schoolmaster for the town," and also to procure a house or chamber for the schoolmaster to live in and a schoolhouse for him to teach in. Now it is important to note this year. The great Civil War had been in progress since 1641, and Belfast, already a place of some importance in Ulster, had been occupied in turn by Royalists, Scots, and Parliamentarians, and had narrowly escaped being captured by the Irish. At first the town was held for the Royalists by the Lord of the Castle, Colonel Arthur Chichester. In 1643, however, General Monro, with 1,200 soldiers of the Scottish army, occupied it in the name of the Covenanters and held it, with one short interruption, until 1649. Colonel Chichester and the other leading Royalists were allowed to depart unmolested to join the Royalist forces under Ormond in Dublin. During this period a number of Presbyterian clergymen came over from Scotland and occupied the pulpits of at least some of the parish churches left vacant by the flight of the previous incumbents, in particular the pulpit of the town church which was on the site where St. George's parish church now stands. And it is from this period rather than from the Plantation that the growth of Presbyterianism in Belfast may properly be dated. It is not unnatural to see in this project for the establishment of a Latin or Classical school for the town the influence of Scotland. We know that in Edinburgh at least such a school had already been established.

This decision to establish a school was not, however, put into operation for some time. The execution of King Charles in January, 1649, led to an open breach between the Scottish Covenanters and the English Independents. In Belfast the result of this breach was that for a time Covenanters, Parliamentarians and Royalists united against the Independents and in favour of the Royalist cause. The refusal of Charles II, however, to sign the Covenant lost him the allegiance of the Scots, and with them the Ulster Presbyterians who were in the main upholders of the Covenant. In any case the arrival of Cromwell himself in August, 1649, soon settled the issue. While Cromwell himself marched south to Drogheda and Dublin, Colonel Venables was sent to occupy Ulster. Belfast surrendered to him after a siege of just four days, and from then to the Restoration remained quiet. Colonel Venables used the church as a fort and demolished some of the neighbouring houses to give a better range of fire. It is only fair to add that Cromwell afterwards paid compensation both for the damage to the church and for the demolished houses. It is very unlikely however that during this troubled period any progress was made with the project of the school.

In 1660 came the Restoration and with it the return of Colonel Chichester, now Earl of Donegall and in high favour with the king. Most probably it was shortly after this that the schoolhouse was at last built. It was certainly in existence by the year 1668, because in this year the Earl of Donegall endowed a lecturership in Mathematics in Trinity College, Dublin, laying down as one of the conditions of the endowment that places were to be kept in the College for poor scholars from the school in Belfast. The schoolhouse, which was built by the Earl himself, was situated, if we may accept the evidence of Phillips' Map of Belfast in the year 1685, in the churchyard behind the church itself, most probably where Church Lane now joins Anne Street. Church Lane was, in fact, formerly called Schoolhouse Lane.

All this is corroborated by another interesting bit of information which we find in the records of the borough. In 1688, just before the end of James the Second's reign, the Lord Lieutenant's secretary wrote to the Sovereign of Belfast desiring him "to let the Roman Catholic officers stationed in the town make use either of the Town house or the Schoolhouse for divine service as the one place of worship they had available was a very delapidated house." To this the Sovereign, Robert Leather, replied "As for the Schoolhouse it being of the foundation and free gift of the Lord Donegall deceased and now repaired and supported by his heirs 'twere presumption in us to dispose of what we have only a common interest with all others His Majesty's subjects."

For this refusal the town was punished by James with the loss of its charter. A new charter was granted by which the town was governed by a sovereign and thirty-five burgesses of whom nineteen were Roman Catholics. The Revolution however and the abdication of James followed shortly after, and the period of Roman Catholic domination must have been very short indeed.

After this we lose sight of the school for more than fifty years unless we may find an oblique reference to it in the following advertisement which appeared in the *Belfast News-Letter* sometime before 1749:—

> Robert Wills
> Former Latin Schoolmaster
>
> now keeps shop opposite the Stone Bridge, next door to the Post Office, and sells teas, sugars and most kinds of groceries either in large or small quantities, at as reasonable prices as any in this town. N.B.—He now has new Dutch parsnip and onion seeds, London carot and other new garden seeds, also raw flaxseed and hops, which he will sell at lowest rates.

It appears that the Latin school declined in esteem and that the building became rather delapidated during this period. The heirs of the first Earl of Donegall were absentee landlords who spent most of their time in England where they had interests of greater importance to them than their property in Belfast, large as that was. Moreover, the growing Presbyterian community was at least lukewarm in their support of a school held under the auspices of the Established Church. Those who could afford it sent their sons to Glasgow to be educated in Presbyterian schools. Others tried to find independent Latin teachers for their sons. In this they were faced with the difficulty that the Test Act restricted the right of teaching in grammar schools in England and Ireland to those who took the Sacrament according to the rite of the Established Church. In addition the Earl of Donegall, whose powers were much greater than those of any landlord would be in these days, naturally looked with disfavour on any teachers, even those of the Establishment, who presumed to set up schools in opposition to his own. This is the explanation of the advertisement which appeared in the *News-Letter* in 1754. It ran as follows:—

The Earl of Donegall, at the request of a great number of the inhabitants of Belfast has, at a great expense, put the School House in repair, and brought to town the Rev. Nicholas Garnet and appointed him schoolmaster for the town. The Earl of Donegall and his Trustees have heard that some of the inhabitants do send their children to other schools. They have now ordered me to acquaint the inhabitants, as well as their other tenants in the neighbourhood, that they are not pleased with such treatment, and hope they will not be laid under the necessity of taking notice of any individual who shall continue to do so.—John Gordon, Agent.

The Earl of Donegall in question was the fifth earl, who apparently took a greater interest in the town than his predecessors. Rev. Nicholas Garnet was a Master of Arts, probably of Trinity College, who had previously kept a boarding school in Dunbro near Dublin. As master of the town school he would receive a small salary, but would also collect fees from all except perhaps a few of the poorer of his scholars. He continued to be the town schoolmaster at least until 1765. In that year the Earl paid a brief visit to Belfast, and the schoolmaster and his pupils waited upon him in his town house and, as the newspaper reports, were "favourably received. Master Brett addressed his Lordship in a Latin oration, to which his Lordship was pleased to return a very obliging answer in the same language. Master Brown addressed his Lordship in an English speech."

This great occasion was almost the last, perhaps the very last, of the glories of the old school. The church, which was in great decay, was pulled down in 1774 and it is likely that the school was abandoned about the same time. A new era in education was beginning. The Test Act, which had proved such a barrier to educational advance, was repealed in Ireland in 1780. Higher education was thus opened to non-conformists, and for the time at least passed almost entirely into the hands of the Presbyterians. The Belfast Academy, now the Belfast Royal Academy, the first of the new grammar schools was opened in 1786, and its first Principal was Rev. Dr. Crombie, minister of the First Presbyterian congregation of Belfast.

But we must now retrace our steps a little to look at some schools and schoolmasters of a different type that sprang up in great numbers in the second half of the eighteenth century to meet chiefly the needs of the growing commercial and trading community of the town. These needs may be classified in four categories. First there was the demand for the bread and butter of education, for reading, writing and arithmetic, for the equivalent of a primary education. Then there was the demand for instruction in subjects specially suitable to a mercantile community, for mathematics, especially applied mathematics, at least in its simpler forms, for geography, for book-keeping, and for quite specialised subjects like navigation and measurement of land. These formed the basis of technical or further education; not grammar school education, for in those days grammar school meant Latin or Classical school, though indeed other subjects like English or Mathematics might be included more or less as extras. Thirdly there was a growing demand for accomplishments, previously thought of as belonging to the gentry alone, for dancing and fencing, and for foreign languages, particularly French and Italian. Lastly, there was a demand for education for the girls for whom such subjects as reading, writing, French, dancing and deportment were considered appropriate.

These various demands were met by a large number of private teachers for whom schoolmastering was a trade not a profession. These teachers, not professing to teach the classical tongues, were exempt from the restrictions of the Test Act, and needed no qualifications other than a knowledge, real or assumed, of the subjects they professed to teach. Their schools were not controlled by any governmental regulations either as to courses, hours or buildings. Their contract was directly and entirely with the parents of their pupils, sometimes no doubt with the pupils themselves. There were indeed at first no special school buildings as we understand them. The teacher might teach in his own lodgings, in an inn, or in a house which he rented or bought for the purpose. Furniture and equipment were of the simplest, and moves from house to house or from town to town were frequent.

Boarding arrangements were equally simple. If he had a house with rooms to spare the teacher might advertise his willingness to accept boarders—and that was that. There were no special playgrounds, no special cloakrooms, none of the elaborate arrangements of a modern boarding school, just a bed to sleep in and a class room to work in.

As might be expected, there were many different teachers each teaching his own subject or subjects in his own school. The English teacher taught young children the elements of reading and spelling: not writing, for that came later as a highly specialised subject taught by the writing master. Later still would come the teacher of mathematics, and perhaps also the dancing master and the fencing master. Sometimes these latter visited the pupils in their own homes as did also the writing master. Sometimes it was arranged that they should visit the pupils in their schools just as music teachers may do to-day.

These teachers must have worked very hard in order to make a living. It is true that expenses were small, but so also were the fees, and there were no government grants to supplement them. The fees ranged from 4/4 a quarter in a reading school to a guinea a quarter in a mathematical school. Hours varied with the type of school, but could be as much as six hours a day. Most of the teachers gave "private" lessons in the afternoons or evenings in addition to the "public" classes in their schools. These "private" lessons were for those pupils whose parents did not wish to send them to the "public" school, and were naturally much dearer, as much as half a guinea a month.

Some interesting glimpses into the schools and schoolmasters of this period are afforded by the advertisements that were issued when new teachers set up in business or, as they frequently did, when they changed their places of abode. In August, 1750, for example, we read "John Ozier, Reading Master, open'd school at the Guardhouse the Sixth of this Instant" and again, two years later "John Ozier hath open'd a Reading School at the Eagle and Child in Waring Street after the best and most concise method, etc. N.B. He will attend Gentlemen's children at their own houses."

In the same year we read that "Dunlap Adams, writing master, hath removed to an appartment commodious for his business on the Old Quay; where Gentlemen may have their children boarded after a genteel manner as well as taught writing after the most approved methods. The hours of teaching are so fixed that young gentlemen who go to the Latin or Dancing School may attend him without loss of time, and for the convenience of those who cannot attend in the day time they may be taught at night. N.B. Mr. Adams presumes that about six or eight months due attendance at his publick school will be sufficient to instruct youth of ten years old and upwards of a tolerable capacity to write a good hand." Within a few months we hear that this same Dunlap Adams . . . "is determined for the future to teach also arithmetick and Book keeping. He has removed to a house in which Mr. John McKedy, merchant, lately dwelt, where he has good accommodation for boarding young Gentlemen."

Sometimes shop-keeping and teaching were combined, as in the case of Charles Montgomery who "at the Spinning Wheel in Castle Street, Belfast, having been encouraged by the Linen Board to keep a flax shop, the same is kept by his wife, who is well skilled in that business, and she now has and will continue to have a good assortment of choice heckled flax and tow which she will on account of said encouragement sell on reasonable terms. And as his said wife carries on the flax business independent of him, he still continues closely his former business of teaching, writing, arithmetic, merchants' and supercargoes' accompts, after the most modern and approved manner."

The education of girls at this period is illustrated by the advertisements of a Mrs. Sanagon who keeps a boarding school "where young ladies will be carefully attended and instructed in the methods practised in the best boarding schools in the kingdom, besides all manner of cooking and the French language if desired, at the usual prices." This was in 1755, and in 1756 we hear that Mrs. Grizel McKewn "relict of the Rev. Robert McKewn, intends opening a boarding school for the education of young ladies. The young ladies shall be taught to read and work, and carefully instructed in the principles of religion and morality. N.B. There is a good dancing and writing master in said town of Belfast."

As the years passed the demand for this kind of education seems to have increased steadily, and more and more teachers came to try their fortune at it. How hard the work can have been is shown by the advertisement inserted by a Mr. James Bailie in 1757. Mr. Bailie declares his intention of opening a school in North Street near Waring Street "on Monday the 24th inst. October, for English, arithmetick, book-keeping and several branches of the mathematics, from 9 till 12 forenoon and from 2 till 5 afternoon; for writing, drawing, etc., from 8 till 9 forenoon and from 12 till 1 afternoon; for French at any hour convenient after 6 at night. N.B. He teaches English by the powers of the alphabet, according to the most approved method in Edinburgh, where he was some years an assistant in one of the best reputed schools."

This advertisement is interesting for several reasons. It illustrates the growing ambition of the teachers, who were no longer content to teach one or two subjects only but aimed at giving a complete education of its kind. French, too, was coming into the curriculum as an optional extra, to be paid for as such, of course. Then we have interesting evidence of the continuing prestige of Scottish education which has had such a lasting influence on our Ulster system, an influence that has on the whole been of great value in establishing sound standards of scholarship.

The ambitious type of schoolmaster with, I fear, a touch of the charlatan ready to teach any subject, except of course the forbidden classics, which a pupil can be persuaded or cajoled into learning, is further illustrated by James Morphett the mathematician who opened school in 1758. Mr. Morphett engaged to teach "at his lodgings, at Mr. John McDowell's in Linen-Hall Street, Belfast, arithmetick in all its parts, book-keeping, staticks, algebra, fluxions, geometry, conick-sections, gauging, mensuration, surveying, as also land surveyed by the most accurate methods, trigonometry in all its parts, geography, navigation by five various methods, dialling, astronomy according to both systems, gunnery, fortification and the use of the globe, etc. Each scholar who attends the publick school from the hour of nine in the morning until two in the evening to pay half a guinea entrance and one guinea per quarter. Any select number who would not chuse to attend the publick school to fix upon the most convenient hours, morning and evening, to pay half a guinea entrance and half a guinea a month. Constant attendance will be given. Belfast, 9th March, 1758. N.B. A certificate of my behaviour and performance under the hands of the principal gentlemen in Tullamore may be seen, and letters from some great mathematicians in my favour."

Mr. Morphett, who thus announced his descent on Belfast, was not content to remain for long in lodgings. By the following August he had taken "a commodious good house next to Mr. James Hamilton's wine merchant, at corner of New Street, where he intends to take in boarders and day scholars; day scholars at the prices formerly mentioned, and boarders at the rate of sixteen pounds a year, and one guinea entrance, for dyet, washing, and tuition; and as he has fitted a large schoolroom and other rooms contiguous to his school for such gentlemen as chuse to study by themselves, he also intends to have his schoolroom painted round with all the principal propositions of Euclid, geometrically, algebraically, and fluxionally demonstrated that scholars may study them from their first coming to school; he also intends to lecture once a week, alternately upon the mathematics and natural philosophy, for the benefit of his scholars and other benefactors . . ."

It is unnecessary to quote the rather prolix Mr. Morphett in full. It is enough to say that he continued to instruct young gentlemen, though in how many subjects we may take leave to question, until at least 1760, when he had a house in Warren Street (that is Waring Street), "now furnished with a compleat set of maps and a large pair of globes." It is a relief to turn from his flamboyant showmanship to one who with little advertisement did more for education than any of his contemporaries.

David Manson, a native of Cairncastle, Co. Antrim, born in poor circumstances but educated beyond his station by a local clergyman, came to Belfast in 1752 and engaged in business as a brewer. His real interest, however, was not in brewing but in teaching. In 1757 he announced the opening of an evening English school at his house in Clugston's Entry on the western side of what is now Lombard Street "for amusement." Shortly afterwards he opened a day school, still keeping his brewing, however, though the latter became more and more a spare time occupation. The school prospered, and in 1760 he took a house in High Street for boarders as well as day scholars, both boys and girls. His announcement has the touch of his own personality.

"They will be taught to spell, read and understand the English tongue without the discipline of the rod by intermixing pleasurable and healthful exercise with instruction. As virtue is preferable to learning due regard will be had to their morals; good nature, truth and integrity always encouraged and the contrary vices exposed wherever their symptoms appear. The credit of the school is supported by the constant application of the undertaker and three careful assistants who have their classes in separate apartments to prevent confusion."

It will be seen that in some ways Manson was well ahead of his time. We know that he was genuine in his effort to teach by encouragement and interest rather than by the rod, that he achieved considerable success, and that many of his pupils afterwards became distinguished men. A number themselves became teachers, and used with success his methods in their own schools, so that his influence on elementary education went far beyond his own school. His methods too were as original as they were effective. To stimulate the interest of the children and to encourage them to work, the most successful pupils on a particular day were appointed king and queen, the others being appointed dukes and lords according to their merits. Another device he used was a set of playing cards with words instead of the usual pictures to help the children with their spelling. Manson's cards were in use for quite a while after his death. We may smile at the quaintness of these devices, but in principle they were not much different from some of the aids employed successfully in progressive schools to-day.

David Manson's father came to live in Lilliput, on the road to Carrickfergus half a mile or so from the centre of Belfast. Here he had a nursery and a bowling green where David Manson's scholars were allowed to play in the evenings. Here also David Manson kept a machine called a 'flying chariot' on which he gave his pupils free rides. Others he charged sixpence, while benefactors who subscribed half a guinea could ride as often as they wished. The exact nature of this machine is unknown. Some have suggested that it was a flying machine, but it is much more likely that it was some kind of velocipede.

At any rate we can see that David Manson was influenced by the inventive urge of the age, and had that uninhibited and enterprising spirit so characteristic of the period. We can imagine, too, that he was trying to develop Lilliput as a kind of Vauxhall.

Manson continued to teach with growing success for over thirty years. Like most of the teachers of the time he moved house on several occasions, first from Lombard Street to Rosemary Lane, and from there in 1768 to a larger house in Donegall Street just opposite the present Talbot Street. At the same time he arranged for a certain Mr. Eccles to open a French school and for a Mr. Wood to open a Mathematical school in a building just opposite. Mr. Manson's timetable was, we are told, so arranged that his pupils were able to spend part of their time at these schools. In this way we see the idea of a collegiate school taking shape. After fourteen years Manson moved again to a house at the corner of Donegall Street, opposite what was then the Exchange, where the Belfast Bank now has its headquarters. Here, he declares, he has excellent accommodation for day scholars and a few boarders. The front part is let as a shop, and he still brews at the proper season a few barrels of beer.

Ten years later David Manson died. His obituary was written by Henry Joy, editor and proprietor of the *Belfast News-Letter*, whose daughter had been one of Manson's pupils. He had lived through an epoch, and when he died a new era had already begun. The old Latin school had gone and the Test Act had been repealed. The Belfast Academy, which combined four, and later, five schools—a classical school, a mathematical school, a writing school, an English school and a French school—all in one building, had opened six years ago at the other end of Donegall Street, where Academy Street still preserves its name, with Dr. Cromie as head of the Classical school and Principal of the whole Academy. The day of the free-lance schoolmaster was nearly over, and the day of the school as we know it was just beginning.

SOME ACCOUNT OF THE TRAINING OF TEACHERS IN IRELAND

J. Windsor Musson, M.A., Ph.D.

It is a truism that any society gets the teachers it deserves; on this premise the Irish in 1800 deserved and certainly got very little. I must hasten to add that I am concerned only with the teachers of the poor, not those in the royal foundations and in what we might term 'secondary grammar schools' Here are some contemporary accounts of what teachers were like at the start of our period—1800. My first comes from the 1812 Report of the Commissioners of the Board of Education in Ireland and the second from the 'Schoolmaster's Magazine and Educational Inquirer.'

The masters were castigated as 'being deficient in information and unacquainted with regular plans of education.' This lack of qualifications to teach, the Commissioners call 'deplorable' and they consider the inevitable consequences as 'pernicious.' The editor of the 'Inquirer' reveals as sorry a state of affairs: 'Your profession is infested by an immense number of individuals who become schoolmasters merely because they have failed in procuring any other sort of employment.' These men were declared to be: 'broken down hacks, erstwhile gentlemen's servants.'

The first ray of light to dawn across this dark educational night was a remarkable letter written in 1805 to the Chancellor of the Exchequer for Ireland —obviously **the** person to be addressed on matters educational. The writer was one of the greatest teachers of his day, Joseph Lancaster, whose monitorial system perhaps needs explanation. Whether it was his system or that of a Reverend Andrew Bell, an Anglican clergyman, is a matter of dispute but the salient feature of both their methods was the application of industry, the conveyor belt system, to education. Thus children were grouped into drafts. Each draft passed before a lad of about eleven or slightly older who heard their prepared reading; then they passed to another who tested their spelling, to another who questioned them on tables and so on. The monitors thus filled with the little they knew the rows of empty vessels passing before them. This letter contains so many points of interest, some of which have so modern a ring, that I make no apology for quoting it extensively.

"In the education of youth," Lancaster writes, "it is the mind which is the proper object of action: by forming that to virtue and usefulness, the true end is obtained. Education as a science must therefore consist in knowing how and when to make right impressions on the mind."

What Ireland needed, he pointed out, were good teachers who would support the English rule of the country. This he implied in his insistence that dependence should be placed on their integrity and peaceful disposition. Remembering to whom he was writing he pointed out: "It is possible with the low price of labour to train and employ them at moderate expense."

Lancaster was an idealist. He saw in a race of teachers trained on his methods the cure for the moral decadence into which the Irish people had sunk. He writes: "It is by informing the minds and reforming the morals of the people that Ireland will attain its proper dignity among virtuous nations. Of this, education under the Divine blessing is a medium promising much success."

Lancaster then sketched the system of training he proposed for Ireland. Its foundation was to be the eradicating of bad habits and the creating of good ones. The instructors were to adapt to their purpose all they could find of use in the practice and theory of other training institutions and in the works of writers on education. These authors should be daily read to the students who should be strictly catchecised. Nothing should remain merely theoretical. All theory should be reduced to practice and no action should be performed in the classroom which the student could not justify on rational grounds.

The practice of teaching was to be carried out in a large central school containing from 30 to 300 children. The students started their studies in the central school where the principal was to live; then they were to be put in charge of one of the satellite schools for a period under the less frequent supervision of the central school principal.

Records were all important then as now. Each student was to keep two, one in which a complete account of the day's business was to be given and the other, anticipating our recent record cards, was "to register the temper and conduct of each child"; this would be especially useful to other teachers, who could see what was in store for them when they took over a class, and could mount their offensive in readiness.

In view of what subsequently happened the next proposal is laughable. Students were to be trained for 12 months. It took nearly 100 years for this, to us, obvious recommendation to be put into effect.

Lancaster gave much thought to the type of student he wanted. They had to be young, for it was difficult to teach an old dog new tricks. They must also be poor. Poverty for the schoolmaster has always been the deliberate policy of his various masters! At this period it stemmed from fear—fear that he might rise in the social scale and exercise too great an influence. Although he was a necessity he was also a danger. He had influence and he might use it to sow seeds of disaffection; keep him poor lest he glimpse a type of life that he found desirable. If that happened he would demand better treatment and then where would they be was the cry of officialdom. And so the children were to pay for the training of teachers; 4d. or 6d. a week from those attending the practising schools would yield, so Lancaster thought, a surplus.

Lest it be thought that Lancaster was a paragon of all the virtues his views on punishment are of interest. A boy who had been checked for a fault several times was to be shackled by the neck with a wooden log. Of this procedure Lancaster said, "The neck is not pinched or closely confined, it is chiefly burdensome by the manner in which it encumbers the neck when the delinquent turns to the right or left." If this treatment failed, shackles of wood could be placed on the legs. "Thus accoutred, he is ordered to walk round the schoolroom till tired out." If this and other devices failed there was worse to come. Lancaster writes: "Occasionally, boys are put in a sack or in a basket suspended to the roof of the school . . . This punishment is one of the most terrible that can be inflicted on boys of sense and abilities."

Such, then, was the blue-print for a system of teacher training, but who was to translate it into actuality?

On December 7th, 1811, came the answer—from the Society for Promoting the Education of the Poor in Ireland. This was a Quaker enterprise which had the management of some large Dublin schools which were run on the Lancasterian system. At their meeting, attended by Lancaster himself, they resolved not only to train teachers but to give grants to anyone who would conduct a school on their lines. Lancaster could not undertake the training and so he sent one of his ex-pupils, a 23-year-old "treasure, frought with the most lasting benefits to the population of Ireland." The 'treasure's' name was John Veevers, who was to take over the Dublin model school at a salary of £200 a year.

This society soon became known as the Kildare Place Society from the premises it occupied, and a very remarkable society it was. It not only provided schools and trained teachers but created a corps of inspectors, printed its own text books, and set up an Education Information Bureau.

To obtain teachers for training the society advertised in various journals and four responded who were trained between February 2nd and May 28th, 1814; you will note that it took three years to get this scheme started.

Four to six weeks was the average length of the course and some very 'old dogs' attended—some were 55, while the youngest I have been able to find was only 16. Before they could be boarded by the society they received a grant of £5 5s. which covered their fare to Dublin as well as their board and lodging which they found for themselves. It was not until 1819 that a hostel was provided, in New Street, Dublin.

The students were to be recommended by their patron provided he could certify them as being of 'a patient temper, mild but firm disposition, of unblemished moral character,' and 'fully convinced of the importance of inculcating on the young mind a love of decency and cleanliness, of industry and truth.' Unfortunately, a patron's 'swan' might be considered by the headmaster of the model school only a 'goose' and so the patron had to supply his protegé with his return fare.

As soon as the students arrived they were examined to ensure that they possessed a competent knowledge of the rudiments of spelling, writing, and arithmetic. Most of their time was spent 'on the job' in schools under the watchful eyes of the teachers. In the evenings Veevers would give them a lecture and set them to write up their journals and to make extracts from the works of the best authors, often from Pestalozzi, a noted Swiss educationist.

These evening activities took place from 6-8. The Society's 1830 report describes the syllabus as consisting of Arithmetic, Geometry, Geography, Book-keeping, Drawing, Laying out of Gardens, and Information on Building and Fitting up of Schoolhouses.

The numbers attracted to training steadily increased. In 1815 the number was 16; by 1820 it had reached 55; 3 years later it was 127; and in 1825, 207 students passed through the Society's hands at an average cost of £7 a student.

When a student left he was given a certificate showing his grade. The best were described as 'Fully Competent'; the next as 'Competent'; and the rest were quaintly classified as 'Having had an opportunity of being made acquainted with it.' Later, the more normal 1st, 2nd or 3rd class was substituted.

In 1826 the Society felt a pang of remorse. It had done nothing to improve the domestic habits of the poor in Ireland. A woman's touch was needed and so schoolmistresses were called up for training so that they might 'acquire habits of order, neatness and regularity and learn how to prepare cheap and wholesome food.' No. 2 Kildare Place was rented so that 30 could be accommodated there and a superintendent, a Miss Edkins, was appointed at a salary of £100 p.a. She was sent to England to see how schoolmistresses were trained and visited the Borough Road schools attached to one of the oldest and most famous of the English Training Colleges. This training proved very popular and, in 1826, 108 students received their certificates. Their course was similar to that for the men except that it included Embroidery, Straw-plaiting and various kinds of Knitting and Fancywork.

As was pointed out earlier, according to Lancaster the cost of training could be defrayed by the children's pennies. Like some of his other ideas this was highly unrealistic. Had not Parliament approved the Kildare Place Society's work and voted £6,980, it is doubtful if its activities could have been carried on on any scale. By 1830 this grant had reached £30,000 but it was given with a strict proviso. Ireland, divided in her people; religious beliefs, must not be disturbed by the new influence—education. If the society upset "the peculiar religious tenets of any sect or description of Christians" they would forfeit financial assistance. Certainly the society had no deliberate intention of doing this. It eagerly adopted the 1812 Commissioner's insistence that "children of all faiths should be taught as one body, under one and the same system, and in the same establishment." To ensure this the Bible was to be read in class but without any comment whatsoever by the teacher. This undenominational feature was eventually the society's undoing but it accelerated its demise by a very foolish action. It used some of its grant to assist purely denominational schools, such as those of the London Hibernian Society; the cry arose that the Kildare Place Society was proselytising; it was therefore deemed an unsuitable body to further the education of Catholic children. Further, the reading of the Bible from a Protestant version was calculated to forfeit the confidence of those who formed the bulk of the population. And so opposition started in earnest about 1819, led by Daniel O'Connell, and grew to such extent that in 1824 the government was forced to set up a Royal Commission to enquire into the state of education in Ireland. Four out of five of the Commissioners were Protestants but they condemned the Society's 'no-comment' rule and proposed that if it refrained from using the grant for purposes other than its own and if it allowed religious instruction proper in its schools but with proper safeguards it should continue its work.

The report lay, as is the custom with reports, unacted upon until 1828 when it was referred to a Committee of the House, together, if you please, with the 1812 Report. The Committee urged the complete separation of literary and religious education.

Again history repeats itself. As might be guessed the Report was ignored and agitation caused the Chief Secretary for Ireland, E. G. Stanley, to withdraw the grant, set up a Board of Education, and to give the £30,000 to the Lord-Lieutenant to place at the Board's disposal, and instructed them to organise schools and train teachers.

The Society struggled on for several years on voluntary contributions; its work was of course drastically curtailed. Although in 1833 it managed to collect £4,237. In 1839 the Training School had to be closed but some training did continue with a handful of students until 1847 when its premises were taken over by the Church Education Society, an institution of the Church of Ireland. By this date the curriculum of the students had been greatly widened to include many new subjects, at least according to the Society's reports, although one may wonder how deep the instruction went.

The course had been extended to 4-5 months and the following were on the time-table: English, Grammar, Composition, Derivation of Words, Elocution, Geography, Astronomy, Arithmetic, Bookkeeping, Drawing from Dictation, Geometry, Algebra, Trigonometry, Mensuration and Surveying, Navigation, Physical Science, History, Social Economics, Logic, Scripture, Principles and Methods of Teaching, School Management, and Analysis of Educational Systems.

The Kildare Place Society is of great interest to the student of Education. It was able to profit by experience; it had broadened in a few years its curriculum and lengthened its course; its governing body were zealous men and women, sitting on committees to administer the various branches of the Society's work, their meetings starting as early as 8 a.m., and they were clearly able to absorb anything good in current practice. Had their grant not been withdrawn, the subsequent history of teacher training in Ireland might have been very different—but there were other views.

"It did not teach the art of teaching," said one of the new Commissioners of Education. Another maintained that it did not educate but merely trained the teachers to conduct schools; a third was more precise, stating that the system was directed more to the mechanical arrangement of the classes and coming in and out from the desks than to an intellectual style of training.

Whatever may be the merits or demerits of the system the Kildare Place Society is one of the landmarks in Irish educational history.

What of its successors, the Commissioners of National Education? They, seven in all, all Protestants but two, faced a great task. Despite the Kildare Place Society's work the problem of training teachers had been barely touched. They had to allay Roman Catholic suspicions, and train as rapidly as they could those who were still being described as "destitute of information and tact for teaching." The first announcement of their plans do certainly make the heart rejoice. In 1836 their report declares that "they must not only educate teachers but also advance the profession of schoolmasters to a higher station in society, that a more respectable class of persons might be induced to adopt that profession." And now came a very modern note sounding strangely out of place when we remember Lancaster's views on a teacher's remuneration. In the same year the Board regretted that it hadn't been able to bring forward the class of teachers they had desired but now they could—provided they could secure the services of competent persons by adequate salaries. Unfortunately, teachers have never seen eye to eye with the Treasury as to what an adequate salary is.

The Board knew exactly what sort of teachers they wanted. Do we? Does our Ministry? It would be interesting to compare their version with the following: "Teachers were to be of Christian sentiment, of calm temper and discretion, imbued with a spirit of peace, of obedience to the law and loyalty to their Sovereign." Such teachers would be a power for good in the community. Like Lancaster, the Board were idealists. In 1835 they wrote: "It is not, however, merely through the schools committed to their charge that the beneficial effects of their influence would be felt. Living in friendly habits with the people; not greatly elevated above them, but so provided for as to be able to maintain a respectable station; trained to good habits; identified in interest with the State, and therefore anxious to promote a spirit of obedience to lawful authority, we are confident that they would prove a body of the utmost value and importance in promoting civilization and peace."

The Commissioners insisted on keeping a tight control lest they found themselves guilty of creating Frankensteins. Therefore these teachers were forbidden to attend meetings for political purposes and to take part in elections for Members of Parliament or Poor Law Guardians except by voting.

Early training was, however, modest. It started in 1834, February 10th, in converted outhouses and stables in Merrion Street—a strange place to start such a crusade against ignorance and vice as this was intended to be. The course was to last two years after preliminary training in a Model School. As there were no such schools except the one in Dublin, and as teachers were urgently required, Ireland had to wait until 1884 before the course lasted as long as this; in the 'thirties and for many years after, three to five months was all that could be provided. Fifteen teachers assembled in Dublin on February 10th, 1834, for the first class. There were three Protestants and twelve Catholics; the first to be entered in the Report Book of the Principal, Dr. McArthur, was one Alexander McGowan of whom was written: "A Protestant. Attentive and evinced a desire to improve. I have little doubt that he will be a good teacher. Reads well. Writes well. Competent to teach Arithmetic, Book-keeping, Geography, Use of Globes, Mensuration of Superficies, Acquainted in a slight degree with Land Surveying and Navigation . . ."

Very soon complaints were being heard about the type of entrant being called by the Inspectors for training. The students were usually selected from the ranks of untrained but practising teachers. The Training College staff complained bitterly about the poor material they had to work with. And so it was laid down that entrants must be at least 18 and must prepare, on their own, for an entrance examination in grammar, the Board's 3rd, 4th and 5th Lesson Books, Arithmetic, Geometry, and Mensuration. To this was to be added a certificate of good character from an officiating clergyman and the taking of the oath of allegiance or the making of a solemn declaration before a magistrate and the Commissioners; these were to be the safeguards to prevent the Professors from wasting their time.

At first the students lived in lodgings at 12s. a week. They were "locked up," although boarding out, at 8 p.m., and college porters were sent to see that they were safely behind closed doors. This was, however, only a temporary measure, for from 1842 Hostels were provided where the students could be under closer supervision.

Books appeared to be the last things that teachers in training required. Over and over again the lack of a library at Marlborough Street (for that was the name of the Board's Training College) was stressed. There was no laboratory or apparatus for years even though the Professor of Scientific Subjects had offered to pay one-third of the cost himself.

Life must have been very uncomfortable. The dormitories were large barrack-like rooms with no compartments separating the beds, and the classrooms and lecture halls were described by the 1870 Powis Commissioners as 'depressing and repulsive.'

In these gloomy surroundings sixteen hours a day had to be spent. The men rose at 6 a.m. and their time-table reads as follows:— 6-7 a.m.: Rise, Wash, Devotional Exercises, Making Beds. 7-8.30 a.m.: Study. 8.30-9.20 a.m.: Breakfast. 9.20-10 a.m.: Walk to Model School, recreation in playground. 10-4 p.m.: In Model Schools and Lecture Rooms. 4-5.30 p.m.: Dinner and Recreation. 5.30-8.45 p.m.: Study. 8.45-9.30 p.m.: Supper and Relaxation. 9.30-10 p.m.: Preparing for Bed.

What did the students study, at first under Dr. McArthur and his one assistant, and later under the staff of four resident lecturers? The answer is—everything. In 1855 the syllabus solemnly states the following—all, be it remembered, to be grasped in 4½ to 5 months!

Methods of Teaching the Alphabet; Orthography; Reading; Meaning; Elements of Logic; Board's Lesson Books; Review of Systems of Popular Education; Methods of Teaching; Review of Treatises on Popular Education; Geography; Elements of Astronomy; Political Economy (based on Archbishop Whately's 'Easy Lessons on Money Matters'); Outline of English Literature and General History; Arithmetic; Algebra; Geometry; Trigonometry and Surveying; Mechanics; Hydrostatics; Pneumatics; Optics; The Steam Engine; Electricity; Heat; Chemistry as applied to Agriculture and the Arts.

The Training College staff admitted that this syllabus was mere deception. All teachers didn't take all the subjects and those who took the scientific ones merely 'mugged up' the relevant pages of the Board's treatises on the subject and if they were lucky they received a few lectures in addition. These treatises were issued in all subjects, many prepared by the same Professor. The series of Lesson Books or Readers played a large part in the student's training. They conveyed much miscellaneous and improving information and teachers were required to be thoroughly familiar with the contents. They had been prepared to oust such 19th century equivalents of Horror Comics as 'Female Adventurers,' 'Feast of Love,' 'Effects of Love,' 'Women as they are,' which were much in use in the West.

Teaching practice was of course carried out in the Model School and students were assessed at the end of their course on their work in general and not on the result of an examination.

One subject not so far mentioned and which was given great prominence for many years to come was Agriculture. Once a week, the males were marched in crocodiles to Glasnevin for instruction in that science as well as in Horticulture and Land Surveying, and at college they were made to memorize the Board's notorious text-book on the subject. It was admitted in 1869 by the Professor of Science that then it was 20 years out of date.

In 1842 women came to Dublin to be trained and it is good to notice that early the importance of special training in Infant Method was realised—indeed in 1856 the War Department sent 30 Regimental Schoolmistresses to be trained as Infant Teachers. Lest we be deceived by this it must be pointed out that Kindergarten training as we know it did not make much headway until this century. In 1899 Kindergarten teaching could only be found in 448 of the 8,600 National Schools.

The Commissioners soon discovered that their new organisation could not train enough teachers to meet the urgent need and so other methods had to be found. The chief of these was to set up Model Schools all over the country to act (although the Board did not at first intend this) as subsidiary Training Colleges besides giving a form of secondary instruction on the most improved methods. By 1870 there were 30 of these schools, a large proportion being in Ulster.

In the Model Schools the teachers were superior to those in the National or Primary Schools and the subjects taught in some included Art, Science, Navigation and even the experiment of French and Latin. To these schools came boys and girls for their training from National Schools having been hand-picked and awarded Monitorships. They would assist the teachers in hearing lessons, would teach the rudiments for a few hours a day, and would help in the general superintendence of the children in classrooms, cloakroom and playground. Many of their lessons would be taken with children of their own age and they would receive special instruction after school hours.

The salaries paid and the regulations as to age on entry underwent many changes, the position in 1855 must suffice for the purposes of this paper. 300 boys and girls were employed as Junior Monitors. They served for three years, from 10 to 13, at salaries of £2, £3 and £4 for each year. At 14 a boy could become or enter the Model School as a Senior Monitor. He served for four years at £5, £6, £8 and £10. In 1870 there were 2,866 such monitors in service. At 18 he could leave and obtain a post as a teacher and never go to a Training College at all, although the Board had at first planned that his monitorial training should be merely preparatory; indeed, in 1862, 76 pupils left Belfast Model School to become Principals and Assistants.

In 1846 the Board announced that monitors could also be trained in suitable National Schools and as a result the Model School came to be regarded more as the preserve of a superior type of student teacher known as the Candidate or Pupil Teacher.

These pupils were selected from monitors or other candidates by public examination and boarded for two years from the ages of 17 or 18. Thus if a pupil passed through all stages he would be in training from 10 to 20. Sometimes National Teachers, feeling their deficiencies, accepted places as Pupil Teachers and extern students were also trained.

The success of the scheme largely depended on the calibre of the Headmaster. It was no small thing to be entirely responsible for up to eight young men of Training College age, living, eating, working with them, being responsible for their morals, and seeing that they attended to their religious duties. It must also be remembered that there could be students of different faiths under one roof. It is little wonder that the schools were eventually boycotted by the Roman Catholics.

If it was thought that the student at Marlborough Street had a rigorous day, what are we to say of the life of the Pupil Teacher? If he was being trained at Newry Model School, the first to be opened in 1849, this was a typical day:

5.30 a.m.: Rise. Wash. Make bed. Devotions. 6.30 a.m.: Forcing Pump. 6.45 a.m.: Study. 8.45 a.m.: Breakfast. 9 a.m.: Open gates in playground. 10 a.m.: In school with pupils. 3 p.m.: Dinner. 3.30 p.m.: Recreation. Walk with Master. 5 p.m.: Mend pens. Sweep Schoolrooms. Forcing Pump. Lock Doors. 5.30 p.m.: Study. 8.45 p.m.: Supper. 9 p.m.: Mend pens for study room. Lock street gate. Clean shoes. 9.30 p.m.: Retire. 10 p.m.: Lights out.

Wednesday evenings were devoted to walks with the Master and as a diversion students practised surveying with a chain. On Saturdays from 1 to 4 p.m. they were free to visit friends or their clergy.

In addition to these duties which seem to account for every spare moment some were held responsible for the condition of the schoolhouse and grounds "to habituate them to the observance of order and rule in all their arrangements."

The diet was as Spartan as the régime. For breakfast, porridge and milk was served, or bread and cocoa. For dinner, the Ballymena School menu was among the best: on Sundays there was meat; Mondays, rice and milk; Tuesdays, meat; Wednesdays, Irish stew; Thursdays, soup or meat; and Fridays and Saturdays, fish. Supper consisted of bread and milk and occasionally porridge.

This diet was carefully planned on social as well as economic grounds. In his report on Trim Model School, District Inspector Newell stated:

"I hold it to be of paramount importance that, while the dietary is sufficient, it should be simple—that it should be of such a description as they may afterwards be able to afford themselves—not too far removed from what they have been used to, or too nearly approaching what might give them ideas of luxury."

All teachers were divided into three grades, each with its own sub-divisions. When the Board took over it sent its Inspectors to grade teachers in their schools as well as those leaving the Training College and later Model Schools. They stayed in their passing-out grade unless they succeeded in securing advancement by passing examinations. They could not earn any more money unless they passed. Not only was a pass necessary but the general conduct and condition of their school was taken into consideration. It was not necessary to have gone to a Training College at all, for teachers could study on their own for the grade of Class II, Division I and after 1866 for the coveted goal of many the First Class, First Division. By good answering it was even possible to skip a division. Yet, in 1869, out of 8,989 teachers only 190 Principals and nine Assistants were classified as 1^1. Why was this? Because there were no books easily available for home study. Teachers often lived in remote areas, libraries were not available and there were few to guide their studies. The only opportunities many of them had of hearing of improved systems of teaching or of obtaining direction for their studies was when they met their colleagues before the examination itself.

Some teachers formed societies for mutual improvement. In 1840 the Ulster

Teachers' Association announced a programme of study and the Armagh Teachers' Association met regularly to sit at the feet of one of their members who acted as teacher.

For backward teachers, the weak, and inefficient, some Inspectors organised Saturday morning 'penal' classes; later, a team of organisers was formed, educational shock troops, who descended on a school, at the invitation of the managers, and carried out a thorough overhaul.

Although the picture so far given of teacher training agencies is incomplete, there being others offering training in one subject or more, it must suffice for the purposes of this paper, namely to review the most important. We must now take stock of the position in 1870. As has been stated the bulk of the population were Roman Catholic, their clergy certainly, and many of the laity as well, holding the view stated clearly by Cardinal Cullen that: "Education refers to a man's whole life, here and hereafter; it must therefore be religious as well as secular; all secular duties should be based on higher motives; to relegate religious instruction to one period of the day, and to forbid it during the greater portion of the school hours is to assign to it an inferior position; it produces indifferentism." Therefore the Board's scheme for education and especially teacher training was doomed to failure; it is surprising that it lasted as long as it did, to the early 1870s in fact.

The second fault was that it was not as good as it might have been because of the attitude of the Commissioners. They maintained that they knew what was right and either ignored constructive suggestions or considered them evidence of insubordination. The length of training in Dublin was far too short and in the Model Schools too much at the mercy of one man, the Headmaster. The course was factual in content and was condemned on all sides as a sort of 'literary treadmill,' a product of the mechanically minded age. An English Inspector held the view that he was fully justified in regarding teachers from Marlborough Street as virtually untrained.

The mere fact that in 1868 a Commission had to be appointed which sat for two years and published the most monumental report on education that Ireland had ever seen in its eight folio volumes shows that the criticisms were not without foundation. The Commissioners made far reaching recommendations amongst which was the abolition of the Model Schools and the setting up of denominational Training Colleges. Model Schools were not, however, abolished, although certainly no more were built, and it took thirteen years before the Board could be persuaded to set up denominational Training Colleges. This fact leads to the first reflection which one must entertain when looking back over the past sixty years and that is that realism in education is often the only solution to a problem. In a country where the religious and political division is as marked as in Ireland it is foolishness to hope that both sides will accept a common educational system.

The recent report on Primary Education issued by the Eire Ministry of Education states clearly that the primary aim of the Junior School is to assist parents in training children in the fear and love of God. To accept that premise means to accept the inevitability of denominational education and therefore the denominational training of teachers who will be practising Christians believing the faith they teach. In such a college and school the curriculum will be arranged around Theology, traditionally the Queen of Sciences, as its nucleus. The alternative is secular education, or at best mere ethical instruction which has been firmly rejected by Roman Catholics, and by many members of the Church of Ireland and the Presbyterian Church, now as well as during the period under review.

Another aspect of the early training of teachers is the gradual acceptance by the representatives of the state of the views of their 'opponents,' teachers, some Inspectors' and the more intelligent of the public. But while it is desirable that teachers should have much freedom to order their affairs, a freedom long denied, one must ask how many are ready for this increased measure of self-government. This is largely the Training College's responsibility. As to how it is meeting it under the present dispensation is a subject for another paper. This one must end with the posing of important questions.

Are Pupil Teachers a thing of the past? Is it wholly a blessing that students start their training after leaving school? Should the further education of teachers be insisted on or made much more worthwhile than at present? Is it desirable that all education (for children and teachers) should be denominational?

There has been no Commission on Education in Northern Ireland for some time. If a second Powis Commission were to visit us would it approve of what it found in 1960 more so than in 1870? Luckily the terms of reference of this paper do not require the hazarding of a guess as to the answer.

THE ORIGINS OF SOME PARISHES IN NORTH DOWN

J. R. H. GREEVES, T.D., B.SC., A.M.I.E.E.

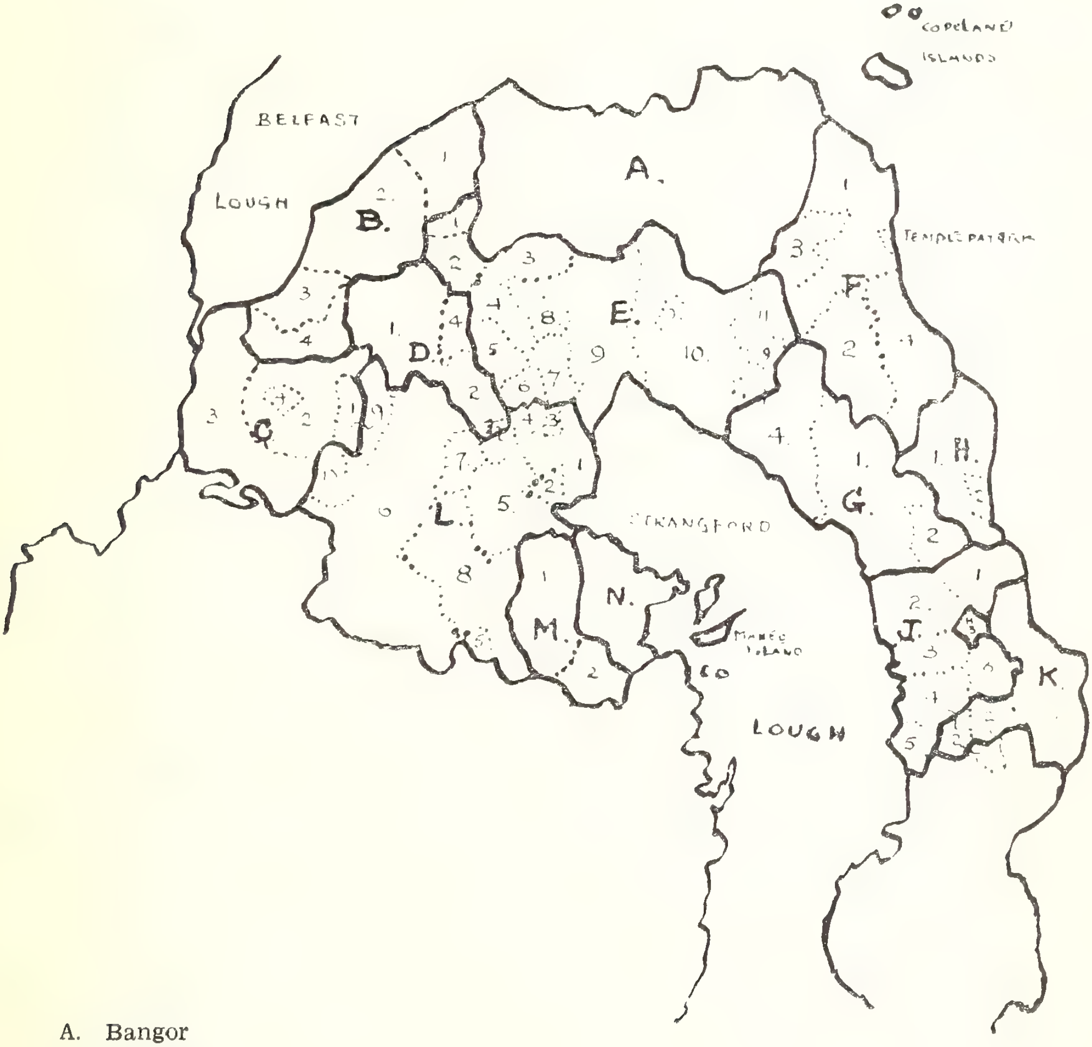
The Celtic Church in Ireland was organized, not on a Diocesan basis, but rather on a tribal one. When Christianity was first established, Ireland was, and continued to be for many centuries, the home of a large number of tribes or clans, often at war with each other, owing a somewhat loose kind of allegiance to provincial rulers or "kings" over whom was the High King or Ard-Righ whose office, like those of all rulers and chiefs in Gaeldom, was theoretically elective; and who had his residence at Tara, with the kingdom of Meath as his royal demesne.

The Church was entirely monastic: a leader with a few followers from his tribe would found a small community, living in huts of wood or basketwork and teaching those who would come to them. The head of such a community was the Ab or abbot, who would normally be in priest's orders. One member of the community might be consecrated bishop for the purpose of confirmation and ordination; but such a one had no territorial jurisdiction and was under the control of the Ab; his episcopal function was entirely spiritual.

The Danish settlers in Dublin, Waterford and Limerick introduced a Diocesan form of church government. This led to the uprising in the Church of a party who were anxious to see this diocesan organization applied to the whole of Ireland, and the Celtic Church brought into conformity with the rest of Western Christendom. After years of bitter controversy this party finally triumphed at the Synod of Rath-breasail held at some date, not precisely known, between the years 1110 and 1118. At this synod Ireland was divided into dioceses, the first step towards the establishment of the present order of things; the division into parishes, each with its local church, began soon afterwards. It is probable that some of these parish churches had existed earlier as chapelries of the monasteries, but we have no proof of this. P. Power, writing in "Feilscribhin Torna" (Cork University Press, 1947) says that "we are fairly justified in assuming that, as the diocese was based on an ancient territorial area or petty kingdom, so the parish must have previously been a small administrative unit." This may well be so, but by the time that the tribal areas in Co. Down appear as such in the Inquisitions, they do not seem to be in any way related to the parishes, except in the case of the parish of Craigavad or Cragger (see below under Holywood).

The coming of the Normans in the 12th century must have encouraged the setting up of a parochial organization, following such important changes as the division of Ulster into bailiwicks by Sir John de Courcy; but the first list of parishes and chapels in the diocese of Down (and elsewhere) is that made in 1306-7 by command of Edward I, who had obtained a grant from Clement V of the ecclesiastical Tenths from his dominions for two years. The Rev. William Reeves, M.R.I.A., afterwards Bishop of Down, Connor and Dromore, edited this list, as far as it concerned his own diocese, and published it as "Ecclesiastical Antiquities of Down, Connor and Dromore" in 1847, and it has been greatly drawn upon by all subsequent writers on the history of this part of Ireland(1).

For the purpose of this paper I am taking the word "Parishes" to mean the civil parishes which were, until comparatively recently, coterminous with the ecclesiastical parishes of the Church of Ireland. Of recent years new parishes have been erected, with the result that in many cases the old boundaries no longer obtain. The parishes as delineated by the Church of Rome were often



A.	Bangor
B.	Holywood
C.	Knockbreda
D.	Dundonald
E.	Newtownards
F.	Donaghadee
G.	Greyabbey.
H.	Ballywalter
J.	Inishargy
K.	Ballyhalbert
L.	Comber
M.	Kilmood
N.	Tullynakill

The numbers refer to the ancient divisions as numbered in the text.

much larger; for example, in 1880 the Catholic parish of Newtownards included the civil parishes of Newtownards, Donaghadee, Bangor and parts of Comber and Dundonald(2).

Starting then in the North of County Down we shall begin with the parish of

A. BANGOR. The civil parish of Bangor consists of 29 townlands all of which belonged to the great Abbey of Bangor. In an Inquisition taken at Downpatrick 13th October, 1623(3), they are represented by 34 names, most of which can be identified(4). It does not appear to have been subdivided into smaller parishes, nor is anything definitely known of any chapels-of-ease within its bounds, although the name "Ballykillare" may mean "the place of the Western Church"(5) which would indicate that a church of some kind existed there; furthermore, there is tradition of a chapel in the townland of Ballygrot near Helen's Bay railway station(5), but here again there is no definite knowledge. The parish extended from Orlock on the east to Ballygrot (Helen's Bay) on the west, and included the Copeland Islands(6), though these are not mentioned in the Inquisition. There was a chapel on the Great Copeland Island, together with a small graveyard, but nothing is known of its history.

Adjoining Bangor on the west is

B. HOLYWOOD. This is made up of 4 separate portions:—

(1) The ancient parish of *Cragger* or *Craigavad*(7), which comprised the townlands of Craigavad, Ballyrobert, Ballydavey and Ballygrainey, together with Ballymoney in the present parish of Newtownards. These 5 townlands were the Territory of "Sleught Bryan Boy" and at some early date passed into the possession of Bangor Abbey, the parish being presumably served by a vicar appointed by the Abbot, who was rector, and the abbey appropriated the tithes of these townlands. The church, situated in the grounds of what is now the Royal Belfast Golf Club at Craigavad, was a ruin in 1622(8).

(2) The lands of the Priory of *Holywood* or *Haliwode*—comprising the townlands of Cultra, Ballymenagh, Ballykeel, Holywood or Ballyderry and Knocknagoney—the tithes of these 5 townlands belonged to Bangor Abbey, and in 1306/7 they formed the parish of Haliwode(7). The church, which had been burned by Sir Brian MacPhelim O'Neill in 1572, was reported in 1622 as "partly repayred"(8).

(3) The ancient parish of *Ballymichgan* or *Ballymaghan*, which consisted of the townlands of Ballymaghan, Ballymisert and Ballymachoris (now Strandtown). Like Craigavad, the rectory passed into the possession of Bangor, which held it at the Dissolution. The church is not mentioned in the Ulster Visitation Book of 1622, so it had probably fallen into disuse by that date; it is believed to have been situated in the grounds of "The Moat House," in the townland of Ballymaghan(8).

(4) The townlands of *Ballyhackamore*, *Ballycloghan* and *Killeen*, being portion of the territory called "the Plains of Belfast," which possibly formed part of the ancient parish of Dundela or Knockcolmcille (see Knockbreda).

It is interesting to note that the civil parish of Holywood is once again divided into no less than 5 portions, namely Holywood, part of Glencraig, Garnerville, part of Dundela and part of St. Brendan's.

South of Holywood we come to:—

C. KNOCKBREDA. Several small parishes went to the making of this :

(1) The Chapelry of *Corgrippe* **or** *Gortgrib*; this was a Mensal of the Bishop of Down and consisted of 2 townlands (now divided into 3), Gortgrib and Gilnahirk in Knockbreda parish, aparently at one time considered

as one townland "Ballygillenhery alias Ballygorthgrib"—and Ballyhanwood in the extreme north of Comber parish. The church, called "Corr Cribber" in the Visitation was a ruin in 1622(8).

(2) The parish of *Dundela* or *Knockcolmcille*. It is not clear over which townlands this parish extended. Reeves says "It is now (1847) incorporated with Breda and the exact boundary between the two has been forgotten"(7). It is likely that the townlands were those surrounding the church, which was situated in the old graveyard in the townland of Knock—e.g. perhaps, in addition to the 3 mentioned in Holywood parish, Tullycarnet, Knock, Multihogy, Ballyrushboy, Braniel, Castlereagh (including Slatady) and Lisnasharragh. The church was a ruin in 1622(8).

(3) *Bredagh*: The church with its ancient cemetery was in the demesne of Belvoir Park, near the Lagan, and was ruined in 1622(8). The parish may perhaps have included Ballymacarret, Ballynafeigh, Ballymaconaghy, Galwally, Breda, Cregagh and Lisnabreeny, Ballylenaghan and part of Knockbracken. All these (with the exception of the last two) and all those mentioned in Dundela were in the territory known as "Castlereagh-Galloghs." Half of Ballydollaghan is now in Knockbreda, but it is likely that it was originally part of Drumbo, in which its other half lies.

(4) *Carnomuck*—a townland lying in the heart of Dundela parish—belonged to the Priory of Saint John of Jerusalem, situated at Castleboy in the Little Ards.

East of Knockbreda and Holywood is

D. DUNDONALD. This is a union of two parishes and 2 chapelries :

(1) *Dundonald* or *Dondafnald*. Although mentioned in the "Terrier"(9) as having one townland only and being See property, the parish must have been much more extensive as it is valued in the Taxation at 6 marks (£4)(7). It probably consisted of Ballymiscaw, Ballyregan, Dunlady, Church Quarter (probably the townland belonging to the Bishop) and Ballybeen. The last appears to have been the northern tip of the territory of the Sleught-Kellies: the rest were in Sleught-Downing or Sleught-Owen McQuin (the boundary between these septs is not known). The church was in ruins in 1622(8).

(2) Parish of *Ballyoran* or *Wauerantone* (Orantown). This was appropriated to the Abbey of Inch, and consisted of 4 townlands—Ballyoran, Ballylisbredan, Ballyrainey and Unicarval. The church, a ruin in 1622, was situated in the demesne of Rockfield(8).

(3) The chapel of *Castlebeg*, endowed with one townland of the same name (which was then much more extensive than it is now, portion of it having been taken on the formation, in the XVII century, of the Manor of Mount Alexander, now a separate townland) belonged to the Archdeacon of Down. It is not mentioned in the Visitation.

(4) *Carrowreagh*: there is a tradition of a chapel in this townland, situated in a spot still known in O'Laverty's day as the "chapel field," but nothing is known of it, and it may well have been merely a chapel-of-ease for Dundonald; in which case the townland would have been included in that parish.

Bordering Dundonald on the east is

E. NEWTOWNARDS. This is a very complicated conglomeration of small parishes and chapelries, and seems to be made up of the following:—

(1) The townland of *Ballymoney*, originally part of Craigavad. (See under Holywood.)

(2) Chapelry of *Craigogantlet*: this is not mentioned in the Taxation, but the Terrier calls it "Capella de Carrigornantalan"; and with the townland of the same name it belonged to the Abbey of Movilla. It is returned as ruined in 1622(8).

(3) Chapel of *Ballyskeagh* or *Thalascheagh*. This had 2 townlands known as "the two Ballyskeaghs," and now called High and Low Ballyskeagh. It was a mensal of the Bishop, and the church was a ruin in 1622(8). It is probable that it was at one time of considerable importance; it had, perhaps, the 5 townlands mentioned in 1260-61 as belonging to William de Gyesburn in Tullachskeygh(10).

(4) Chapelry of *Kiltuga* or *Kiltonga*, also known as Killarneid—in the townland of Killarn—had 2 townlands, Killarn and Ballyrogan; the chapel had disappeared entirely by 1622, when the Visitation Book says "Noe curate, nor able to mainteyne one, the people repayre to Comber and partly to Downe Donald, ye next churches"(8). There is some doubt as to whether this chapelry belonged to Movilla or to the Priory of Down. An Inquisition taken in 1605 gives it 3 townlands, but does not name them.

(5) The townland of *Greengraves*, being part of the Territory of Sleught Owen McQuin; it is not clear to what parish this belonged; there is a possibility that it formed part of the possessions of a nunnery which is reputed to have been situated somewhere in the vicinity. (For a discussion see O'Laverty, vol. II, page 133.)

(6) *Ballyalton* (part) and *Ballymagreehan*; two townlands of which the tithes belonged to the Abbey of Movilla.

(7) Chapelry of *Kilcoman*, which apparently had the townlands of Scrabo, Ballycullen and Killynether in Comber parish. The chapel would seem to have been in the latter townland; at the Dissolution it pertained to the Priory of Newtown, but it is not mentioned either in the Terrier or the 1622 Inquisition.

(8) The townland of *Milecross*, otherwise Ballyhamlie or Ballyhawley. This is an isolated townland belonging to Movilla among those of Newtown, etc. There is an ancient cemetery therein called Killysugan, and it may possibly once have formed a chapelry on its own, but nothing is known of its history.

(9) The possessions of the Dominican Priory of *Newtown* (Newtownards) or Ballynua, presumably coterminous with the parish of the same name, as the Rectory was appropriate to the Priory. It is not easy to identify all the townlands mentioned in the Inquisitions, but as they are described as "Newtown, Kilcowman and Barnes, and all the lands in the township and plain of Lisnevan, near Newtown"(11), it would seem to have included, as well as *Kilcoman* (see above), *Newtownards* or Ballylisnevan, Gregstown, The Commons, Newtownards South, *Whitespots*, *Tullynegardy* and *Ballybarnes*, those *in italics* being positively identified. It also appears to have had the outlying townland of Crossnemuckley on the eastern border of the present parish, and also perhaps Cronstown. The curious fact is that the tithes of all these, except Newtown, Kilcoman and Ballybarnes, belonged to the Abbey of Movilla, whose possessions account for the remainder of the parish. There is some doubt as to whether Crossnemuckley belonged to this Priory or to Greyabbey.

(10) The possessions of the Abbey of *Movilla* These comprised the precincts of the abbey and "the towns and lands called in English The Seven Townlands lying around the said monastery"(11), i.e. Movilla with Bootown, Ballyharry and Ballyhenny, Drumhirk, Ballyalicock, Loughriscouse,

Ballywatticock with Ballyreagh, and Ballyhaft with Cunningburn; it may be that the part of the large townland of Ballyblack now in Newtownards parish (the rest being in Greyabbey) also belonged to Movilla, which possessed the tithes of all these in addition to actual possession of the lands.

(11) The townland of *Drumawhy*. In 1623 this was part of Donaghadee parish, and as such owed tithes to Black Abbey.

Eastward of Newtownards and Bangor lies

F. DONAGHADEE. In this area there were at least four separate parishes

(1) The parish of *Dofnachti* or *Donaghadee*. The Rectory was appropriate to Black Abbey, and the parish extended over Ballywilliam, Ballynoe, Ballycross, "Ballenemoine" (probably now represented by Herdstown and Hogstown), Carryreagh, Ballyvester, Craigboy, Ballycopeland, Killaghy, Donaghadee, Drumawhy (now in Newtownards; see above) and "Balle-Kilcolmuck." This last was possibly the modern Templepatrick, where there was apparently a chapel (not mentioned, at least by this name, in the Taxation), which had its own townland(9) but which belonged to Donaghadee as glebeland(11) and was probably a chapel-of-ease of the parish church. The name Kilcolmuck has vanished; according to the Taxation, Donaghadee had a chapel of St. Colman, while in the Terrier the "Capella de Kilcalmocke" is listed as belonging to "the Nuns of Down," i.e. the Cistercian Nunnery of the Blessed Mary, at Downpatrick(12). In the Inquisition of 1623(3) the Rectory of Kilcolmuck is mentioned as having four townlands. It would seem, as suggested by O'Laverty, that there was a parish church and also a chapel, both of which were dedicated to St. Colman (or Colmog).

(2) Parish of *Kilcolmuck*, probably to be equated with the last mentioned. The townlands of this parish were Grangee, Ballybuttle with Islandhill, Ballyfrenis and "Ballyuttagee," the last probably represented to-day by Ballyrawer, Carney Hill and Sloanstown. The church was a ruin in 1622(8).

(3) The parish of *Haytona* or *Ballyhay*. This was the Church of St. Mary of Hayton, the advowson of which was granted in the XIII century to the Priory of St. John the Baptist at Downpatrick by William de Mandeville(13). The Ulster Visitation reports "noe church knowne" in 1622(8). It was a small parish, extending over "the two Ballyhayes"—probably Ballyhay and part of Killaghy, in which the church appears to have been situated(12).

(4) The parish of *Ralfetona* or *Ballyrolly;* the Rectory belonged to the "Nuns of Down." It is likely that the parish extended over the southern end of the present parish of Donaghadee; though mentioned in the 1623 Inquisition, no townlands' tithes are given. The church was ruined in 1622(8). The townlands of the parish were probably Ballymacruise, Ballyrolly, Ballyhaskin, Ballywhiskin, Drumfad, Ballymoney, Ballydoonan, Kilbright and part of Ganaway (but see below under Whitechurch).

(5) A quarter of Ganaway called *St. John's Quarter*, which belonged to the Priory of St. John of Jerusalem.

(6) A quarter of Donaghadee called *Carrownathan*, which belonged to the Abbey of Muckamore in Co. Antrim.

South of Donaghadee lies

G. GREYABBEY, with its fine, though ruined, Cistercian Abbey, one of the Antiquarian sights of the County. The parish is made up of

(1) The possessions of the *Abbey*, whose full title was "The Abbey of Holy Mary of the Yoke of God" (Sanctae Mariae de Jugo Dei), consisting of all the townlands of the present parish except 4 or 5 mentioned below.

(2) The possessions of *Black Abbey* or *"The priory of St. Andrew of the Ardes."* Originally extending to 10 carucates, at the Visitation these consisted of 3 townlands, Killyvolgan, Ballynamanagh and Ballymonestraduffe; the two latter being now comprised in one, Blackabbey. The church and its monastic buildings have *utterly* vanished, though the site is known.

(3) *Saint John's Quarter* in the townland of Killyvolgan, which belonged to the Priory of St. John of Jerusalem, in the Little Ards.

(4) The Church of *St. Korcany*—probably Templecrone, the ruins of which are in Mount Stewart demesne. No tithes belonging to this are known; it may have been a Chapel-of-ease of Greyabbey, but if so would likely have been described as "Chapel" instead of "Church." Perhaps it had the tithes of its own townland, Ballynichol alias Templecrone. Against this view it must be noted that on 26th November, 1675, a sale made by Lord Montgomery to Robert Colville included "All those townes and lands commonly called Templechrone, viz.: Ballynahole alias Templechrone alias Owlestown, Ballymuckly alias Tullymuckly, Ballycaslan alias Castletowne alias Ballyheighley, Ballyblacks alias Ballynapistragh, Carrownester alias Fishertowne alias Killenterny"; so this may have been the extent of the parish; represented to-day by Mountstewart, Ballycastle, Ballyblack and Kilnatierny.

(5) *Saint John's Quarter*, a quarterland in the townland of Tullykevin, which belonged to the Priory of St. John of Jerusalem.

East of Greyabbey lies

H. BALLYWALTER. This little parish extends to seven townlands only and consists of

(1) The ancient parish of *Templefin* or *Whitechurch* containing part (or perhaps originally all) of Ganaway, Ballyferris, Whitechurch, Dunover, Ballyatwood and Springvale (formerly Ballygavan). The Rectory was appropriate to Black Abbey, and the church is not mentioned in the Visitation.

(2) The townland of *Ballywalter*, which belonged to Greyabbey.

(3) The outlying townland of *Ballylimp*, which was returned as in Ballyhalbert in 1605 and as in Inishargy in 1623, either of which would be more appropriate than its later position.

South of Greyabbey and Ballywalter lies the parish of

J. INISHARGY. This is a conglomeration of several small parishes

(1) The parish of *Rone* or *Drumroan*, consisting of Balligan and Ballyobegan (anciently Drumroan). The Rectory was appropriate to the Abbey of Movilla. By 1622 the church would seem to have vanished, and the parish had been divided between Whitechurch, which got Ballyobegan, and Inishargy, which got Balligan; though the tithes had, at the Dissolution, belonged to Movilla.

(2) The ancient parish of *Inishargy* or *Inyscargi*, whose Rectory was appropriate to Black Abbey. It consisted of Ballylimpt (now part of Ballywalter —see above), Ballygarvan, Nunsquarter (perhaps with a chapel of its own)(12) and Inishargy. The church was ruined in 1622(8).

(3) The Church or Chapel of *Kircubbin*, appropriate to the Priory of St. John the Baptist of Down. In a Grant made c1300 by William FitzAlan (de Mandeville ??) it is called "Cubynhillis in tenemento de Ynchemkargy" (14). It was perhaps the Church called in the Taxation "St. Medumy";

it extended over the townlands of Kircubbin or Kilcooby and Ballymullen (now part of Inishargy townland). It is not mentioned in the Visitation, so the church had probably disappeared by then.

(4) The townland of *Rowreagh*, belonging to the small parish of Grangerow (see below under Ballyhalbert) which probably also included Fishquarter.

(5) The parish of *Grangia* or *Coolgrange*, appropriate to the Abbey of Saul. It had the townland of Gransha(3), but the Terrier mentions two townlands and St. John's Quarter(9) without defining which. This parish is not named in the Visitation of 1622.

(6) The townland of *Glastry*. In 1605 this is listed as belonging to Inishargy, while in 1623 it appears as part of Ballyhalbert; it has now reverted to Inishargy.

East of Inishargy is the parish of

K. BALLYHALBERT or SAINT ANDREW, which consists of

(1) The ancient parish of *St. Andrew's, Talbetona* or *Ballyhalbert*, so called from the Norman family of Talbot who had their manor there; this extended to seven townlands—Roddans (which appears in Inishargy in 1605), Ballyhemlin, Ballyhalbert, Ballyfrench, Portavogie, Ballyesborough Ballygraffan. In 1623 it apparently included Glastry as well(3). The church was returned as "repayred" in 1622(8).

(2) Part of the small parish of *Grangerow* or *Rowbane*. This, which is not mentioned in the Taxation, was appropriate to the Abbey of Movilla, and comprised the townlands of Echlinville (anciently Rowbane) in this parish, Rowreagh in Inishargy and Ballycranmore in Ardkeen(3). The Terrier also includes Ballygraffan. This was a very old Celtic foundation mentioned in the Martyrology of Donegal as "Rubha in Ard-Uladh." The Inquisition of 1605 gives it only two townlands, Ballyrow (Rowbane) and Rowreagh. O'Laverty states that Ballycranmore belonged to the parish of Derry in the Little Ards, but as it is far separated from the other lands of this parish I feel that he was wrong in this.

We now return to the west side of Strangford Lough, and southward of Dundonald we find the parish of

L. COMBER. This is made up of no less than 10 different portions.

(1) The parish of *White-Richard* or *Ballyrickard*, comprising the townlands of Ballyrickard, Ringcreevy, "Ballyneganemye" (apparently represented to-day by Glassmoss and Longlands), Ballyhenry (though the tithes of this were said in the Inquisition of 1623 to belong to Movilla) and Castleavery(15). The church was returned as a ruin in 1622(8).

(2) The townland of *Carnemuck or Cherry Valley*, which belonged to the Priory of St. John of Jerusalem, in the Ards.

(3) The townland of *Killynether*, which formed part of the Chapelry of Kilcoman (see Newtownards).

(4) Part of the townland of *Ballyalton* which lies north of Ballyhenry and appears to have belonged to Movilla.

(5) The possessions of the Cistercian Abbey of *Cumber* or *Comber*. These extended to seven townlands in 1605(11): Ballymonaster or Comber, one half of Ballygowan, Carnasure, Cullintraw, Cattogs, "Ballygaruffe" (probably Troopersfield) and Ballynichol. In 1623 Ballyaltikilligan was included. The church, which was burned down about 1572 by Sir Brian McPhelim O'Neill, was partially rebuilt by Sir Hugh Montgomery and fitted up as the parish church. At one time there were two monastic establishments at Comber, the other being an Augustinian House(16), probably a successor of that said to have been founded by St. Patrick(17).

This monastery may have owned the next group of townlands, of which the tithes later belonged to the Cistercian Abbey, but which seem otherwise to be unaccounted for in the parochial organisation. These were

(6) Monlough, Clontonakelly, Ballymaglaff, Ballystockart, Ballyrussell. Gransha, Lisleen, Ballykeel, Moneyreagh, Tullyhubbert and Tullygarvan, a compact group forming the western half of the present parish.

(7) The Chapel of *Rogerstown.* This was valued in the Taxation at 40 shillings, twice the value of the neighbouring parish of Ballymacgehan, so it must have been of some importance, and may well have owned the townlands mentioned above. It was probably situated in Ballyaltikilligan, and in 1622 we have the entry "no cure nor able to maytayne any, the people repaire to the next which is Comber"(8), and in 1623 the townland was included in Comber parish. Ballyloughan, the adjoining townland, may also have belonged to this chapelry or it may have been attached to Castlebeg. (See above under Dundonald.)

(8) The parish of *Ballymacgehan, Ballymuchahan* or *Ballymageehan.* According to the Inquisition of 1618(15) it consisted of Ballymacgehan or Ballymagaughey, Ballymalady, Ballyallolly. Ballybeen, Ballycreely, Magherascouse, Ballyrush and half of Ballygowan, while the Inquisition of 1623(3) adds "Ballytuarnenelege alias Tullycopan"—probably Ballywilliam. The church was a ruin in 1622(8). The townland of Edenslate, originally only a quarterland (Carow-edenslatt). may have been included in this parish.

(9) The townland of *Ballyhanwood*, which was part of the parish of Gortgrib (see above).

(10) The townland of *Crossnacreevy* which I have not been able to place in any parish.

South-east of Comber we have the parish of

M. KILMOOD, sometimes called Kilmood-managh—Kilmood of the monks. This consists of two former parishes

(1) *Kilmood.* The Rectory was appropriate to the Abbey of Comber and the parish consisted of 5¼ townlands: Kilmood (being a quarterland), Lisbarnet, Ballykeel (not to be confused with Ballykeel in Comber parish), Tullynagee, Drumhirk and Ballygraffan. The church was ruined in 1622(8). The present parish church is well worth a visit.

(2) *Ballymonestragh.* The Rectory belonged to the Priory of St. John in the Ards, and the parish comprised 2 townlands only—Ballymonestra and Ballybunden(18). The Terrier enters it as "of Greyabbey" but this seems to be an error, though a later Inquisition taken at Downpatrick, 4th October, 1936, found that it was impropriate by Sir Hugh Montgomery as part of the possessions of Greyabbey.

East of Kilmood we have the small parish of

N. TULLYNAKILL. This represents part of the Manor of Ballydreene, being the demesne of the Bishops of Down, which originally consisted of 14 townlands and 4 islands given to the founder of Nendrum (St. Mochaoi) by a local chieftain(19). At present it consists of 7 townlands—Ballydrain, Castle-espie, Ballyglighorn, Lisbane, Ballymartin, Tullynakill and Ringneill, with the islands of Mahee (on which was the Celtic monastic foundation of Nendrum). Sketrick, Reagh and Rolly. The church seems to have been so ruined by 1622 as to have virtually disappeared, and it was not until 1639 that a new church (now ruined and replaced by a later one) was built in the townland of Tullynakill.

(1) Published by Hodges & Smith, Grafton Street, Dublin, 1847 (referred to as "Reeves".)

(2) An Historical Account of the Diocese of Down and Connor, ancient and modern, by The Rev. James O'Laverty, M.R.I.A., 5 vols., Dublin, 1878-1895 (referred to as "O'Laverty") vol. II p.l.

(3) Printed as App. IV to The Hamilton MSS., ed. by T. K. Lowry, Belfast 1867.

(4) See my "North Down at the beginning of the XVII century" in Bulletin of the Ulster Place-Name Society, vol. III, 1955, for a list and identifications.

(5) O'Laverty, loc. cit. II, p. 130.

(6) Letters Patent dated 20th April, 1630: Charles I to James Viscount Claneboye; in App. II to Hamilton MSS.

(7) Reeves, loc. cit. vol. 1, p. 13, etc.

(8) Ulster Visitation Book, 1622, in Library of Trinity College, Dublin; MSS. C1. E. Tab. 3, No. 6; quoted by O'Laverty, II, p. 189, etc. See Reeves, vol. 1, p. xxi.

(9) A Terrier or Ledger Book of Down and Connor: c. 1615; quoted by both Reeves and O'Laverty.

(10) Exchequer Roll 1260-61: Accounts of Nicholas de Dunheved, Seneschal of Ulster: the names of the townlands or "carucates" are not given.

(11) Inquisition dated 4th July, 1605; Hamilton MSS., App.

(12) O'Laverty, loc. cit. vol. II, p. 28.

(13) Inspeximus in Patent Roll 10 Edward III quoted in Ulster Journal of Archaeology, Ser. I, vol. 2, p. 51. In the Inq. of 1623 this is wrongly stated as having belonged to the Priory of St. John of Jerusalem—the jury having confused the two separate priories of St. John. In my article "North Down at the beginning of the 17th century" in Bulletin of the Ulster Place Name Soc., vol. III, part 1, I was led into the same error.

(14) Patent Roll, 10 Edward III.

(15) Ulster Inquisitions, 13th Aug., 1618, at Downe.

(16) Itinerary of Father Edmund MacCana; in U.J.A. 1st series, vol. II, p. 54. Translated from the Latin by Rev. W. Reeves.

(17) The Tripartite Life; ed. Whitley Stokes, London 1887.

(18) Inquisition at Ardmillan, 4th July, 1606; Ulster Inq.

(19) For a detailed history see "The Monastery of St. Mochaoi of Nendrum" by H. C. Lawlor; Belfast 1925.

J. R. H. GREEVES.

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J. NORTH PYPER, 221 Holywood Road, Belfast, 4.
V. PRAGNELL, 35 Abbey Park, Belfast, 5.

R

REV. CANON RUTHERFORD, B.A , 7 Downshire Avenue, Carrickfergus.
THOMAS G. ROE, Greenwood, Victoria Road, Holywood

S

ARTHUR SAVAGE, Dangan Lodge, Donaghadee.
MAJOR RUPERT STANLEY, LL.D., 51 Windsor Avenue, Belfast, 9.
R. LESLIE STREIGHT, 19 Beech Road, Whitehead.
FREDERICK STOREY, C.B.E., Maormar, Cultra.
J. A. S. STENDALL, M.R.I.A., 53 Abbot's Grange, Chester.
R. W. M. STRAIN, B.SC., M.D., F.R.C.P.(I.), 9 Broomhill Park, Belfast, 9.
E. SHANKS, 7 Norwood Park, Belfast, 4.

T

MRS. TAYLOR, 53 Hawthornden Road, Belfast, 4.
HAROLD THOMAS, M.I.N.A., 19 Holland Park, Knock, Belfast, 5.
S. TURNER, 142 Barnett's Road, Belfast, 5.
FRANCIS TURNLEY, D.L., Drumasole, Carnlough.
ROBERT TAYLOR, Glandegu, Magherafelt, Co. Derry.
GEO. B. THOMPSON, M.SC., F.M.A., 30 Tobarcooran Avenue, Glengormley, Newtownabbey.

V

J. W. VITTY, Linenhall Library, 17 Donegall Square North, Belfast, 1.

W

MRS. E. WEBB-SUMNER, 8 Mount Pleasant, Belfast, 9.
W. GORDON WHEELER, M.A., Queen's University, Belfast, 7.

Y

CAPT. JAMES R YOUNG, F.R.I.B.A., 15 Chichester Park, Belfast, 15.

FORM OF BEQUEST

*I Bequeath out of such part of my personal Estate, as may by Law be bequeathed for such purposes to the Council of the Belfast Natural History and Philosophical Society, the sum of**
free from Legacy Duty, for the general purposes of the said Belfast Natural History and Philosophical Society of the said City, to be expended in such ways as it may deem expedient; and I direct that the receipt of the Hon. Treasurer for the time being of the said society shall be an efficient discharge of the said Legacy.

** Or Specimens of Art, Antiquities, Natural History or Books.*

NOTE.—Land or other Personal Estate may also be given by Deed or Will, to be applied for the purposes of the Belfast Natural History and Philosophical Society, provided that the Deed or Will, as the case may be, be executed not less than three calendar months before the death of the Donor, and that every Deed or Instrument, not being a Will, shall be duly registered in the Office for Registering Deeds in the City of Belfast within three calendar months after the execution thereof.

1 JUN 1962